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SOME ASPECTS OF PREVENTIVE PÆDIATRICS.[1]

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IN our community today no field of medical practice offers a greater opportunity for preventive medicine than does that involving the care of children.

Preventive medicine, whether viewed in the wide scope of public health or in the narrower one of contact with individual patients and families, has, or should have, long since passed the stage when drains, dirty or otherwise, virtually monopolized the scene. That is not to say, of course, that health measures concerned with the control and abatement of infectious disease are not still of great importance. However, the emphasis has changed during the past fifty years or so by virtue of the great decrease in mortality and morbidity due to infection of all kinds.

Better living conditions as well as more purely medical advances have brought this about, so that now the death of a child is regarded as a calamity. Compare the words of Gibbon, the sole survivor of seven children, writing in the eighteenth century, who said regarding the death of an infant that it was "an unfortunate but highly probable event". Even a century ago one-third of children born died before their tenth birthday (Spence, 1950).

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 30, 1957.

Today, with a basically healthy child population, the range of preventive medicine must be extended to include the prevention of accidents and the prevention of mental ill-health. Better still, indeed, to have a positive approach, with the promotion of good health, both mental and bodily, as the primary aim.

We might perhaps begin a survey of preventive pædiatrics by considering a young married couple who are expecting their first child. This not uncommon situation is one which offers the greatest possible opportunity for the prophylaxis of future anxieties; yet what a neglected field it is. Free discussions with the expectant mother, or better with both parents, can help to make this journey into the unknown a much less worrisome affair. Group discussions provide an excellent medium for this type of work.

Dr. Clair Isbister, at the Royal North Shore Hospital, Sydney, is receiving a most enthusiastic reception to her programme of pre-natal classes for parents. It is interesting that the proportion of fathers attending is steadily increasing; perhaps soon father will no longer think of himself as "the forgotten man".

One overwhelmingly important concept of encouragement has been embodied in these words by Housden (1949):

> One of the things which should be taught to all young people before they had any children at all was a matter of faith—that their infants would be healthy beyond any possibility of doubt and that they would be born in good working order.

It is of value to portray in outline the orderly sequence of growth and development of the infant as diagrammatically represented in Figure I, which is a graphic illustration of the progress of behaviour during the first year of life and the cephalo-caudal pattern of this behaviour.

Now to move on to the birth of the baby. When labour is difficult or abnormal the ideal situation would seem to be the presence, at delivery, of a pædiatrician trained in dealing with the problems of the newly-born infant and familiar with the atmosphere of the delivery room, to whom is delegated sole responsibility for the care of the new arrival.

In relative terms perinatal mortality is still high, and this is not entirely due to irremediable causes, even by the present standards of medical practice. Quite apart from the purely obstetrical side, there are conditions which are to some extent predictable and for which provision can be made. Two such conditions of importance are hæmolytic disease due to Rh incompatibility and early rupture of membranes.

Pre-natal care of the expectant mother must today be considered grossly inadequate if it does not include Rh group typing, the first pregnancy not excepted. If the mother is Rh negative and tests for antibody later in pregnancy (after the thirty-second week) give positive results, then ideally the mother should be delivered in a maternity department where the staff are trained in exchange transfusion should it prove necessary.

Early rupture of membranes may indicate the necessity for the prophylactic use of antibiotics for the mother before delivery, or if not for her then for the neonate; certainly a very careful watch is indicated to detect the first signs of infection in the infant.

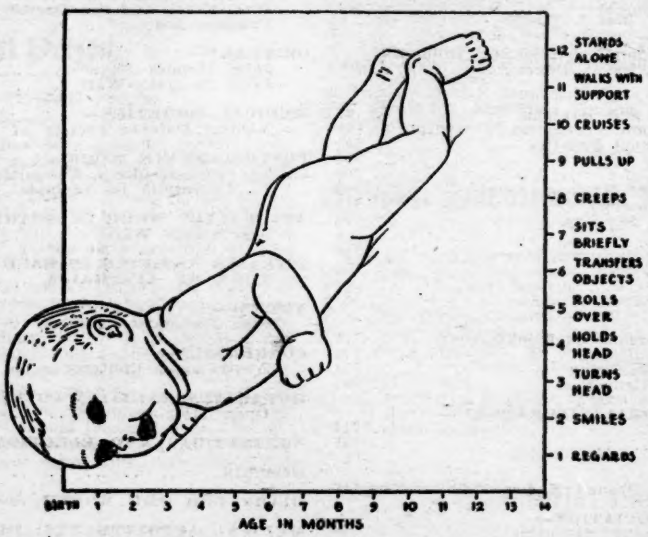

FIGURE I.

Developmental diagram for the first year of life. The infant's figure represents a diagonal line on which is plotted the progress of behaviour against chronological age. The cephalocaudal pattern of behaviour is diagrammatically illustrated by position of the figure. (After Aldrich in developmental graph for the first year of life, Watson and Lowrey (1954): 99.)

Serious infection in the newly born infant still takes an unnecessarily large toll of life. It cannot be too strongly emphasized that a change in behaviour in the direction of lethargy or irritability must be regarded as potentially of the gravest moment. Bound and others (1956) have pointed out the difficulties of differential diagnosis between infection, birth trauma, pulmonary syndrome of the newborn and intraventricular hæmorrhage in the first days of life, and I think that one should never hesitate, if in any doubt, to treat the infant as for an infection. After all, if the infant is infected he may be saved by appropriate antibiotics; there is no adequate treatment for the other conditions.

Let me now return to a healthy newborn infant and his mother. I do not intend to embark upon a discussion of the pros and cons of "rooming-in". Suffice it that I quote the remark attributed to Sir James Spence when he was visiting this country, upon being asked by an astonished obstetrician if he really allowed the babies in with their mothers. "Well, yes, we do", replied Sir James. "You see, we feel it's *her* baby." What heresy such an opinion is to many frustrated nursery sisters! Nor shall I venture upon the controversial subject of home versus hospital delivery. However, I do think there is a great deal to be said from many points of view for as early a discharge from hospital as possible. I do not really believe that many mothers regard a stay in hospital as a restful holiday.

One aspect of neonatal care should be routine, especially with the first-born child. Having himself checked over the baby first, the doctor should at the earliest convenient opportunity take the baby in to its mother. Here the infant is completely undressed under its mother's eyes and she is congratulated on producing such a splendid healthy specimen; she is then encouraged to "fire away" and ask any questions about the baby's shape, size, behaviour, and so forth. Time spent in this way is well rewarded, for thereby many maternal anxieties may at once be alleviated which otherwise might plague her and her doctor for many a day.

It is a good plan to advise the mother—if she has not already done so—to invest in a copy of Dr. Spock's book (Spock, 1957). It is well worth while to take her copy and underline the headings of the first chapter which state: "Trust yourself. You know more than you think you do."

Nothing can be of more assistance to a new mother than constant reassurance on these lines. How sadly we fail here. It is an unheard-of event for the young mother of a first baby ever to be told what a good job she is doing; as many tongues as in the Tower of Babel freely clack their disapproval.

Largely to blame for this is the incredible and stubborn persistence in our community of rigid methods of child rearing. Grateful as we no doubt should be to the German and Austrian physicians who at the turn of the century fathered the new science of pædiatrics, we can only sigh at the oceans of unhappiness their "Prussianistic" doctrines have left in their wake. Babies are human beings, and each one is an individual personage with individual rights and needs. It has been stated (Powers, 1935) that "it would be wise for the physician to worship the baby more and the . . . scales . . . and the clock less". Perhaps we should not be too hard on the physician, who after all may have children of his own. But for those who give advice on infant care by referring the child to charts and formulas we can have no mercy. What untold misery to infant and family alike is brought about by such martinets; what neurotic and obsessional traits may be irretrievably established in these early months. It has been well stated (Katz, 1954) that: "The Truby King method of habituating the child to orderly bodily processes—feeding, sleeping, evacuation—is the scientific expression of the obsessional life."

Early so-called (and mis-called) "toilet training" trains only the mother. One sees so few adults in napkins. It is really rather ludicrous that we can deceive ourselves that we really have anything to do with establishing the developmental skill of "holding on" and "letting go" at will, any more than we do with the initiation of walking and talking. Of course, it is absolutely essential that at no stage should coercive methods be employed if present distress and future troubles are to be avoided.

Knowledge of the normal growth and development of the child will allow us, during the first year of life, to prepare the mother for the almost certain falling-off in appetite which commonly occurs between the first and second birthdays. What an opportunity there is here to

attempt to prevent the almost universal feeding problems associated with the toddling or runabout child. It has always seemed to me a rather quaint thing that the customary admonitions handed out to a mother by her advisers—typically by a disciplinarian clinic sister—are that up to his first birthday she is giving the child too much to eat, but after that she is not giving him enough.

An important and essential part of the care of the young infant is the provision of active immunization. It is obligatory on the part of the child's physician to carry out such immunization, and there is, encouragingly, a trend towards an earlier start. The Institute of Child Health, Sydney,

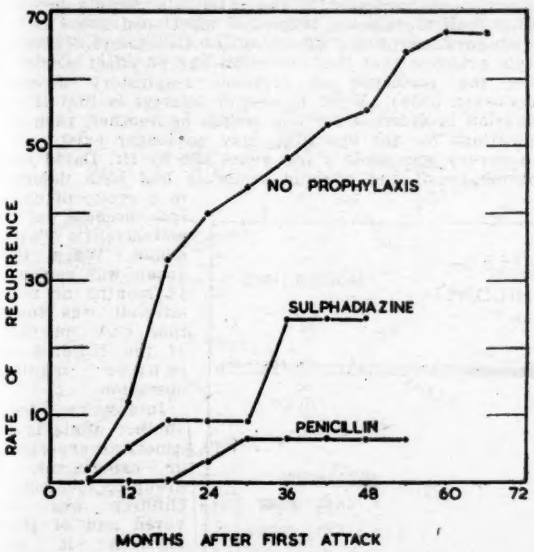

FIGURE II.

The effects of penicillin prophylaxis on the recurrence rates of rheumatic fever in children.

has recently recommended that triple antigen injections be commenced at the age of three months. My own practice is to begin at six weeks unless there is some special reason for beginning earlier. Certain authorities, in regard to pertussis alone, believe that immunization should begin during the first week of life (Butler, 1956).

The advantages of this early procedure lie in the fact that mortality and morbidity from whooping cough are greatest in the early months of life; two-thirds of all children who die from this disease are aged under 12 months, and of these more than half are aged under six months.

Other advantages of early immunization are that local and general reactions tend to be fewer; there is the benefit of early protection; and, not least in importance, the infant is unlikely to remember the unpleasant experiences. If immunization is deferred until the second half of the first year of life it is almost certain—as we all know—that the child will remember some or all of the injections and will view with alarm the subsequent approach of his doctor.

With regard to production of antibodies, there is ample evidence that this mechanism operates adequately from the earliest age, so that postponement of immunization on this ground alone cannot validly be justified.

Apart from the doctor's own case records, the child's parents should be given a written record of all immunizations carried out—a convenient form of record is the card produced by the Australasian Medical Publishing Company, Limited. Ideally, such cards should be endorsed so as to avoid giving the patient unnecessary antitetanic serum after injury. Apart from the cumbersome technique involved in giving antitetanic serum and the inherent dangers thereof, one fact alone should indicate that active immunization against tetanus is mandatory in all children and, indeed, should be so in all adults; in up to 50% of established cases of tetanus no definite portal of entry can be identified with certainty. Moreover, tetanus may follow the most trivial injury for which the use of antitetanic serum would never be contemplated.

What serious drawbacks to immunization are there, if any? Encephalopathy after the administration of pertussis vaccine has indeed been reported, but it is an extremely rare occurrence. In any case, this risk is more than balanced by the risk of mental deficiency after an attack of pertussis itself, quite apart from the question of the other hazards to life and health accompanying the disease (Paul, 1952).

However, it would no doubt be a wise precaution to inquire into a history of convulsions in the family, and if there should be a marked reaction to any injection to consider abandoning the administration of further doses of pertussis vaccine or else giving it separately in smaller dosage.

Paralytic poliomyelitis involving a limb into which had previously been given an injection of combined antigens has been reported from several countries. Again, the advantages of combined immunization outweigh even this most untoward sequela, particularly if immunization commences early and if "booster" injections are planned for that season of the year when poliomyelitis is least prevalent. The advent of immunization against poliomyelitis itself should, of course, further diminish this particular risk; but even so it might be considered best to postpone routine immunization during an epidemic of poliomyelitis.

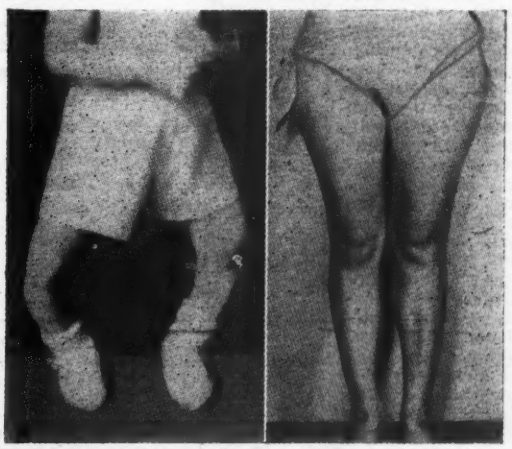

FIGURE III.

a. Child 18 months old, with severe bow legs. b. Same child 15 years old after normal development and no treatment whatsoever.

Smallpox vaccination is not usually carried out as a routine in this country. My own policy is to discuss the procedure with the parents and, should there be a reasonable likelihood that the child will go abroad in his later years, to recommend vaccination before the first birthday. Complications such as generalized vaccinia and encephalomyelitis are very rare, and the latter is so rare under the age of one year that it may be ignored. Eczema, of course, is an absolute contraindication.

An integral part of the protective value of immunization lies in the use of "booster" doses. The best intervals are hard to determine, but usually one can come to a reasonable compromise.

Again on the subject of infectious disease, it may be opportune to mention the prophylaxis of rheumatic fever (Figure II). It has been adequately established, at the Institute of Child Health, Sydney, and elsewhere, that once a firm diagnosis of acute rheumatism has been made it is imperative, first, to make sure of eliminating any

streptococci present by giving the patient one injection of "Bicillin", and second, to minimize the risk of recurrence by insistence on daily prophylaxis with penicillin taken orally in doses of 200,000 units twice a day, half an hour before meals. This prophylaxis should probably be carried on right through life. This, in a sense, is just another example of the fact that medical practice is becoming more difficult, for it is now essential to come to a definite diagnostic decision; and one cannot take refuge behind such unsatisfactory labels as "juvenile rheumatism".

Tuberculosis we may briefly mention. It is hard to assess the value of routine tuberculin testing, particularly with the intradermal test, where one has to place the discomfort of the procedure against its possible value. B.C.G. vaccination is probably best reserved for selected children. With regard to the use of iso-nicotinic hydrazide in primary tuberculosis to prevent tuberculous meningitis, it would seem reasonable to give twelve months' treatment (five milligrammes per kilogram per day) to children under the age of three years).

The physician who "cares" for children—in any or every sense of the word—really has a special duty towards them to protect them from harm. Alas, we must, in fairness, admit that the medical profession itself is not guiltless. We may find some excuse for ourselves in that much of the harm we do is unwitting. Surely we are ill-prepared by an ordinary medical course to care for children. Even today, when there is some increasing realization of the relative importance of pædiatrics, the time devoted to teaching this subject is a mere three months out of the six-year course — that is, about 4%. Yet in general practice considerably more than 4% of one's patients are children.

FIGURE IV.

The relative significance of accidents in the death rate of children in Australia in the three age groups. (Figures are for the three years 1950-1952.) From *Health* (1957), 7:49.

Again, we may take advantage of a knowledge of the orderly developmental processes of nature and of the natural history of disease to protect children from iatrogenic misfortunes. Thus we come to realize that it is not usually necessary to treat raised vascular nævi—"strawberry marks"—as they invariably disappear, virtually without trace, if one is patient enough. Yet I know of a little girl, the daughter of a friend of mine, who almost died from complications after the treatment of one of these birthmarks—and on her bottom at that.

Of the greatest potential value in allaying anxiety in many parents, and so preventing the placing of unnecessary restrictions on their children, is a realization of the natural pattern of upper respiratory disease in childhood. To some extent according to the age at which the child makes other child contacts, within and outside the family circle, every child starts to experience coughs and colds and other infections of the upper part of the respiratory tract. Most of these infections are viral, sometimes with secondary bacterial complications, and some will be primarily bacterial, e.g. streptococcal. With regard to the viral infections, it is of first importance to realize, and to impart this knowledge to the mother, that there is nothing whatsoever that can be done to prevent these infections—short of living alone or in an isolated community. Vitamins, "proper food" (whatever that may mean), tonics, sulphonamide drugs, courses of injections, the weather, wind, clothing, wet feet, have absolutely no influence on the incidence or course of these illnesses. The child will go through a period of two or three years of frequent infections, often so frequent as to appear virtually continuous, and then they will start to diminish, no doubt partly owing to immunity acquired from the very infections themselves.

Perhaps in no other group of children is it more important to get the matter of respiratory infection in true perspective than in those with an "allergic diathesis". Goodness knows that such children have enough of an emotional burden to carry without being constantly fussed about keeping their feet dry, and so on.

Even more important to the child, his parents and his doctor than the suspect influences mentioned above is the vexed question of the effects of tonsillectomy. There is ample evidence that this operation has no effect whatever upon the incidence of common respiratory diseases (McCorkle, 1955). What is also of interest is that if the operation is deferred for one reason or another, then the indications for the operation may no longer exist.

A survey was made a few years ago by Dr. David Dey. Routine tonsil and adenoid removals had been deferred in a group of children because of a poliomyelitis epidemic. When this group was reviewed 18 months or more later it was found that over one-third of the children no longer required operation.

Interesting from another angle is an American experience or experiment. A group of 1000 school children was surveyed and of these children it was found that 61% had already had their tonsils taken out. The remainder were examined by a group of physicians who recommended 45% of them for tonsillectomy. Those not so recommended were examined again by another group of doctors, who advised the operation in 46%. A similar percentage was selected for tonsillectomy by a third group of physicians from those children now remaining. At length only 65 children were left for whom tonsillectomy had not been recommended, and at this stage the supply of physicians ran out (Bakwin, 1945).

I do not think that any comment is necessary.

Nor is tonsillectomy a perfectly benign procedure. On the one hand it is potentially lethal, for mortality is by no means negligible, being approximately one death in 3000 patients, even under the best conditions. Morbidity from hæmorrhage, pneumonia and so forth is considerable; there is a well established connexion between bulbar poliomyelitis and tonsillectomy; and the operation may lead to emotional disorders varying from minor and transient disorders to severe and permanent ones. Combined with these risks are the facts which prove that there is no evidence whatever—that is, valid evidence—that the operation is of any value.

Whilst on this subject, it also behoves us to realize that during childhood a waxing and waning occurs in respect of the mass of lymphoid tissue in the body. Thus, size alone can never be an indication for the removal of tonsils.

Conservative as I am, I confess that I thought that adenoidectomy might have a useful part to play in the management of recurrent acute *otitis media*. However,

another illusion was shattered by a recent report from the Medical Research Council, which showed that no benefit could be attributed to the operation. However, I hear a still, small voice saying: "Well, that's as may be; but in my experience . . ." (I hasten to add that this may be my own voice that I am hearing.)

Let us, then humbly remember the salutary words of Wilfred Trotter in speaking of the meaning of "experience":

> Do not let us submit to the delusion that experience is made up of the events at which we are present. An event experienced is an event perceived, digested and assimilated.

Other non-essential surgical procedures, such as circumcision, umbilical herniotomy and the like, should be approached on every individual occasion with the utmost caution and with a full realization and consideration of all aspects of the problem.

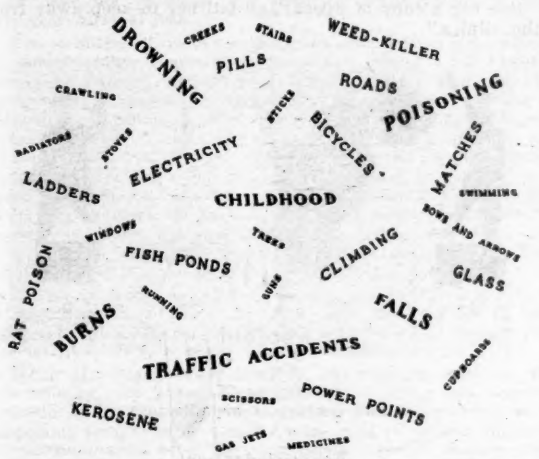

FIGURE V.
Some of the many causes of accidents in children.

A similar acquaintance with the natural developmental changes in the shape and structure of the lower limbs of children will protect us from submitting children to the indignity of special orthopædic shoes, to say nothing of those ghastly mediæval irons. The inborn faculty for cure can produce remarkable results—should we really be astonished?—without our meddlesome interference.

These things we have been mentioning largely involve avoiding cruelty to children—in both physical and emotional aspects. One of the cruellest thing we can do to a child, particularly up to the age of five years or so, is to put him into hospital. I shall not dwell at length—I hope it should be unnecessary—on the evils of hospitalization. Suffice it to say that a child should never be admitted to hospital unless there is something which needs to be done and which can be done only there. Spence said that "the better a doctor becomes, the fewer children he commits to hospital". In similar vein, MacKintosh (1952) admonishes us: "*'Lo envié al hospital' es una expresión de fracaso, no de triunfo*"—"Admission to hospital is an admission of failure . . .". Spence (1947) again—and this might be the guiding rule in all our care of children—has said: "I have yet to find that what is not good for our own children is likely to be good for other people's children."

With further reference to the emotional side, we may perhaps be less cruel (albeit our cruelty is often unknowing or unthinking) if we can feel respect for our children. Let us respect the child as he is, as an individual person; respect and value his individual needs and aspirations; respect him as an important, nay essential, member of the family group and the community. Let us above all respect his dignity and, in the words of Emerson, let us "be not too much the parent".

All these considerations presuppose that we are dealing with a live child. This seemingly macabre remark serves to introduce the most important aspect of preventive medicine in childhood—namely, the prevention of accidents.

Accidents form the greatest physical threat to children today. They cause more deaths in some countries—e.g., in the United States of America—than pneumonia, cancer, leukæmia, tuberculosis, poliomyelitis, intestinal infections, kidney disease and heart disease combined (Figure IV). Australian figures give substantially the same picture.

The important fact is that of their very nature accidents are preventible, theoretically at any rate. But how are we to implement this prevention?

A mother will say "I can't keep my eye on him all the time, although goodness knows I try" and "I can't think of everything" or "I've other things to worry about". But what do parents worry about? They worry themselves and their children sick about such fatuous matters as vitamins and vegetables, bowels and bladder, manners and morals, cleanliness and godliness, sniffles and sneezes. Johnny will not die if he does not eat his spinach, but he may well do so if he prefers the taste of a rat bait; and it does not matter much if he is toilet trained unless he lives to enjoy it. A mother's fears for her child's safety may cause her to have a very confused state of mind (Figure V). What to do about it, then?

Harry F. Dietrich has propounded a most excellent theory in regard to accident prevention, and it is a theory which works. Moreover, it offers a positive approach for the mother and father to employ. As you see in the illustration (Figure VI), the theory is that until the child starts to become mobile—and so capable of getting himself into trouble—virtually all trouble is brought to him. This means he has to have protection of up to 100%. As he grows older he is encouraged to teach himself, under supervision, to respect potentially harmful things; thus, allowing him to touch something painfully but not dangerously hot teaches him the meaning of "getting burnt"; allowing him to "have a go" at a cup of vinegar or a dish of hot mustard, "out of bounds" but not out of reach, will teach

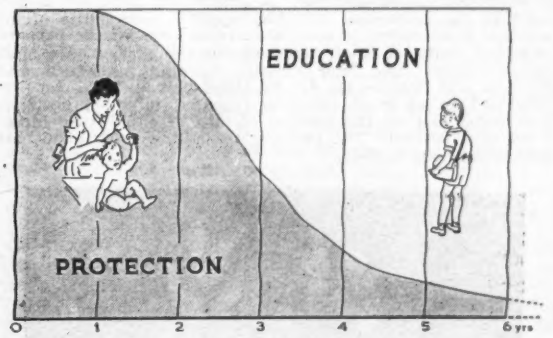

FIGURE VI.
The roles of protection and education in prevention of accidents.

him the meaning of "poison"; allowing, or helping, him to duck himself will teach him respect for water and realization of the fact that it is just not possible to breathe comfortably with the head submerged. In this way we may hope, with very good prospects of success, to help him to educate himself in living safely in the midst of danger.

Parents may, in addition, be given specific warning against specific hazards—for example, that of lead poisoning. Flaking lead-based paint abounds, particularly in old houses, and dangerous amounts are readily ingested by children. Figure VII shows specimens of such paint taken from the house of a boy suffering from severe lead poisoning, and Figure VIII illustrates the point that such flakes are opaque to X rays. This provides a useful and rapid aid to diagnosis, for simple X-ray examination of the abdomen may reveal a mottling due to the presence of such flakes in the child's gut. Toy soldiers and other toys of very high lead content are readily available in this State (Figure IX).

I have been told that the scandalous practice of advising lead nipple shields for the nursing mother still exists in New South Wales. This should surely be regarded as a criminal offence.

Essential, in my opinion, as is the value of education in accident prevention, there is, of course, still the need for protection. One aspect of this, for example, involves the question of what chemical substances are permissible round the home and garden.

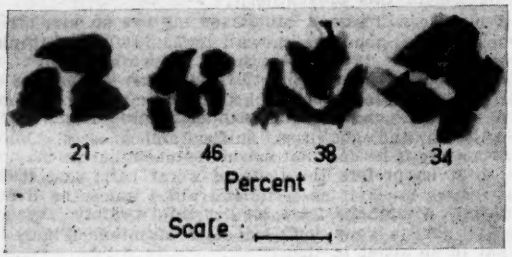

FIGURE VII.
Lead content of paint flakes.

A father called me in great anxiety one Sunday morning to say that one of his children had been playing with some benzene. All was well with the child; but what is somewhat amazing is that the father was a university lecturer and had previously worked in a factory where benzene was used, and he was fully aware of its lethal properties. Yet he had three bottles of benzene around the home.

Another family, in which the parents—and grandparents—are exceptionally anxious about sniffles, bowels and so forth, allowed their toddling boy to walk on a lawn recently treated with dinitro-ortho-cresol, which has caused many fatalities. They were wont to clean this boy's shoes with a dye solution containing benzene. A few weeks later, on a low shelf in the bathroom, this boy found a pint bottle of an inhalant preparation consisting of 100% cresols; the parents had been using it in a vaporizer for the sniffles. He spilt this corrosive fluid over himself, burning his cheek and shoulder and missing his eye by about half an inch. All this happened in spite of previous repeated talks on accident prevention and on the natural history of respiratory infections in childhood. The parents are still worried about his sniffles and his bowels.

FIGURE VIII.
X-ray photograph of paint flakes.

I suppose the moral of this last story is that I am just not a very good pædiatrician. Be that as it may, I hope it does not dissuade you, any more than it has me, from continuing to try Dr. Dietrich's recipe for a live child.

Burns, drowning and poisoning are three killers, and as we have seen we can take active educational measures with a hope of minimizing the risk from these. Falls are another of the big killers. Some help can be given here by teaching children to climb safely—for example, not to carry pointed objects in hands or mouth while climbing, to make sure of firm handrails and footholds, and so forth.

The last important killer is the motor-car, or traffic and road accidents in general. Something can be done now, and more should be done in the future.

First, parents should always ensure that the infant or toddler is in a safe situation within the car. It horrifies me every time I am on the road to see the perilous positions children are allowed to occupy. Parents should remember that the seat next to the driver is the "death seat"; yet how often we see a toddler standing there alone. The toddler should, for preference, stand against the dashboard or the back of the front seat. If standing on the front seat, he should be behind the driver's shoulder.

Second, parents should start teaching road safety rules at the first opportunity and should not be slow to punish transgression. Preferably they should drive a two-door car or fit special safety locks to the back doors.

With these precepts and practices your child may live long enough to drive a car of his own—safely, one hopes.

In conclusion, if I were asked to put in a nutshell my thoughts on preventive pædiatrics, to write a short, easy prescription for a mother regarding the prevention of mental and physical ill health in her child, I would suggest: "Give her a copy of Spock, and tell her to keep away from the clinics."

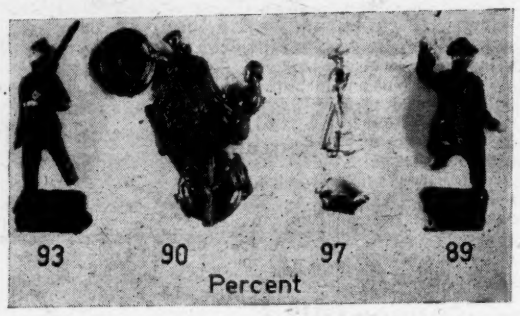

FIGURE IX.
Lead content of metallic toys.

Acknowledgement.

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Figure III is from the article on "Bowlegs and Knock Knees in Childhood" by Frank H. Stellinz and Leslie C. Meyer in *Pædiatric Clinics of North America* for November, 1955, and is reproduced by permission of the authors and publishers.

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CANCER DETECTION IS PRACTICAL.

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CANCER[1] DETECTION is a comparatively simple process. The basic elements have all been taught to every medical practitioner in his student days. It has only two parts: first, the regular examination at intervals of not more than 12 months of all people over 35 years of age; secondly, the education of these people to report immediately any suspicious symptoms that may occur between examinations. Because symptoms frequently appear at a late stage of the disease, when cure is no longer possible, it is not sufficient to rely on the second process alone. Regular examination is essential. Attempts in practice throughout many countries to tackle the problem solely through education have not produced any dramatic improvement in the five-year survival rate.

The technique of the cancer detection examination is described in detail below. Basically, it consists of taking a full history from the patient, including his family history and specific questioning for any symptoms suggesting cancer, and making a full physical examination of the patient, including an X-ray examination of his chest and an examination of a specimen of urine. The actual clinical examination should take approximately 15 minutes. The history requires any length of time from five minutes upwards. I prefer to make this cancer-detection examination part of a general health examination, because it lessens the likelihood of stimulating cancerophobia, it is a much better economic and practical proposition for the patient and it is much more interesting for the doctor.

Cancer is found in about 1% of such examinations and a premalignant condition in about 3%; but defects in the general health which can be remedied with benefit to the patient are found in 75% or more of examinations.

When the basic cancer-detection examination discloses no abnormality, the patient is instructed to carry out certain procedures for cancer prevention, to report immediately any suspicious symptoms that might arise, and to present himself for reexamination after the appropriate interval, usually one year, unless history or habits or examination suggest that a shorter period is desirable.

When some abnormality has become apparent in the basic examination, steps are taken to determine, as rapidly as possible, whether the abnormality is due to cancer or not.

DETAILS OF EXAMINATION.

Equipment.

The essential equipment is very simple and relatively inexpensive. It consists of: (i) The usual surgery equipment, chairs and couch, etc., to provide comfort for both patient and doctor. As the patient must be stripped, an electric heating pad is much appreciated in winter. If the patient is unnecessarily uncomfortable, he is unlikely to be willing to repeat the procedure. For the doctor there should be adequate lighting and exposure and necessary instruments within easy reach, otherwise lesions will be missed, and the tired operator may be tempted to omit essential procedures. (ii) A good adjustable light. (iii) Scales. (iv) Tongue depressor. (v) Glove and lubricant. (vi) Occult blood test solutions; Ham's test is the most reliable and convenient for office use (see Appendix I). (vii) Vaginal speculum and proctoscope. (viii) Microscope slides, pipettes or swab sticks and fixative for cervical smears, if facilities for examination are available (for the technique, see Appendix II). All these, except perhaps (vi) and some of (viii), should be in every practising doctor's rooms at the present time.

In order to carry out as much of the procedure as possible on the spot and at the one time, each doctor likes to have certain other equipment according to his training, experience and interests. I, myself, prefer to have centrifuge, microscope, ophthalmoscope, auriscope, sigmoidoscope, with biopsy forceps, urine-testing apparatus, hæmoglobinometer, X-ray plant for screening and films, and the means of taking biopsies from as many lesions as possible, including biopsy punch and drill, cutting cones and cold knife for the cervix, diathermic cautery, etc.

[1] In this paper, "cancer" does not include generalized forms such as leukæmia, the reticuloses, etc.

A Careful History.

An essential part of the examination is the recording of the patient's history and general health.

1. An opportunity must be made for the patient to state in detail how he feels in answer to the question: "Do you feel perfectly well now, and as a general rule?"

2. Direct questioning, with particular reference to: appetite, change in ability to eat a large meal; bowel function; bladder function; difficulty in swallowing; indigestion, its duration and whether it has changed; weight loss; loss of energy, tiredness and shortness of breath; cough or hoarseness; presence of lumps or sores that will not heal; presence of abnormal bleeding or discharge; any increase or change in any wart or mole; any vague but persistent decline in general well-being; smoking and drinking habits; persistent severe pain anywhere, but especially in the abdomen, not obviously related to nervous stress; to summarize, any change, however slight, in any way that the body functions, which persists for a month or more. This questioning can be made the occasion for education in the early signs or symptoms that require prompt reporting. A list could be given, and the patient could be admonished to bear the questions in mind for future reference.

3. History of previous illnesses; patients with a history of achlorhydria and pernicious anæmia, ulcerative colitis, and arsenical and radiation dermatitis may require more frequent examination.

4. Menstrual history in females.

5. Careful history of the health of individual members of the family, including grandparents; serious illnesses; age at death and cause; the existence of any illnesses which tend to run in the family and amongst relatives.

Physical Examination.

A general clinical examination, as usually laid down, is performed, especially: (i) Recording of the patient's weight. (ii) Examination of the whole skin. (iii) Examination of the lips, tongue, mouth (with dentures removed), visible pharynx and nasal cavity. (iv) Rectal examination with a gloved finger (and proctoscope if indicated). When an occult blood test on the glove specimen gives a positive result, sigmoidoscopy should be performed and a further occult blood test made on a specimen obtained well above the pile area. Further positive results to occult blood tests or the presence of suggestive symptoms would necessitate X-ray examinations by barium meal and enema, test meal, cytological examination, endoscopy and laparotomy, as necessary, to confirm or disprove any suspicion. The prostate should be carefully palpated, and any suspicious abnormality, which means any nodule, or irregular enlargement, should be referred to the urologist, or a smear should be made of fluid obtained by massage for cytological examination. In the United States of America it is stated that sigmoidoscopy should be performed on all patients as a routine. In Australia at the present time this would be likely to do more harm than good, by deterring patients from having or repeating the examination. (v) In males, careful palpation of the testicles and examination of the *glans penis* with foreskin, if present, retracted. (vi) Vaginal and pelvic examination.

Where there is any suspicious lesion, including a positive result of a smear examination, biopsy is mandatory and should include four good "bites" from all around the cervix, or conization. A biopsy examination of all erosions should be made, whether they are to be cauterized or not. Schiller's iodine test may be of some help in determining which area to select for biopsy. Any area which bleeds easily on rubbing with dry gauze is suspicious and a biopsy examination must be made.

Bleeding, discharge, "positive" smear or uterine enlargement may require curettage (biopsy-type or full-scale) with examination of the fragments. It often requires more care and effort than one might imagine to produce satisfactory scrapings for the pathologist, and a lesion can be missed, so that one must not hesitate to repeat this procedure if not completely satisfied. Cervical smears may be taken as a routine. Facilities do exist in Melbourne for examining smears.

A "positive" smear should be regarded only as an indication to search for the appropriate area for a biopsy, and not as a reason for attempting definitive treatment. I am using the cervical smear technique as a routine at the moment, although only over the last few months. I am not prepared to say, on the basis of my own experience or on what I have read of the experience of others, whether it should hold its place in the routine cancer

detection or general examination of the apparently well. I am aware that no cancer detection examination would be highly regarded in the United States of America or elsewhere unless it included this test. Dr. H. F. Bettinger reports that it is a part of the cancer detection examination at every clinic he visited in Europe and America, and that it can be used to give other evidence than merely presence or absence of cancer, e.g. hormonal status. If it were to be used as a substitute for a proper visual and digital examination, it could be a menace.

Ancillary Examinations.

Ancillary examinations should include: (i) An X-ray examination of the chest. (ii) Urine examination (chemical and microscopic of centrifuged deposit). (iii) Hæmoglobin estimation; if this is abnormal, a full blood count and film must be taken. (iv) Mantoux, Wassermann and Kahn tests, when indicated.

Special Regions.

Certain signs and symptoms would point to the need for more detailed investigation of special regions.

Lungs.

Persistent dry cough, pain in the chest, streaking of sputum with blood, repeated lung infections, atelectasis, enlarged hilar shadow or lung abscess should arouse suspicion of carcinoma of the lung, and should lead to further radiography and tomography, sputum staining (with pulmonary lavage if necessary) for cells, and bronchoscopy. When suspicions cannot be proved or disproved beyond doubt in any other manner, exploratory operation should be advised. A "coin" opacity in the lung demands thoracotomy for its elucidation, unless it is specifically contraindicated; neither bronchoscopy nor sputum staining can take its place.

Gastro-intestinal Tract.

Not only obvious symptoms of indigestion of recent origin or altered type, bleeding from rectum or change in bowel habit, but vaguer symptoms, such as undue tiredness, loss of sense of well-being, loss of appetite and of the ability to enjoy as big a meal as usual or difficulty in swallowing, must prompt investigations. These should not cease until a cause for the symptoms has been discovered.

The one patient (referred to below in the section on my results) with cancer of the stomach who survived six years had no symptoms referable specifically to the stomach. He complained of being below par for three months, of loss of energy and weight and of alteration in his bowel habit. A barium enema X-ray examination gave negative results, no significant anæmia was present, and an X-ray examination of the chest showed no abnormality. At this point it was noted on his card: "No lesion has so far been demonstrated, but this man, who normally feels well, now feels ill." So, on general principles, a barium meal X-ray examination was made and showed a ring carcinoma of the stomach. He died from complications of gall-stones six years after subtotal gastrectomy, and post-mortem examination showed no evidence of recurrence of the cancer.

The Brain.

The presence of brain tumours will be suggested by: headache requiring potent medication; convulsions, etc., beginning after the age of 20 years; bony skull masses; deafness without apparent cause; diplopia and vomiting.

Comment.

Any bleeding or discharge casts suspicion on the region from which it comes.

The origin of deep and persistent pain in the abdomen must be sought with speed; and laparotomy, if indicated, must not be put off until all hope is gone. It is not psychogenic unless it is made worse by worry.

We must remember that even chronic neurotics eventually die from some organic disease just like other people, and we must not allow the undoubted existence of a neurosis to blind us to other, grimmer possibilities. It is fatally easy to do this, and very difficult to guard against it while yet maintaining a balanced judgement and outlook.

The primary aim of the cancer detection examination is to separate patients into two groups. The first group comprises those in whom no suspicion of cancer can be detected; these need no further action, other than a list of symptoms to report, preventive habits to follow and a reminder to return in one year's time. The second group comprises those patients in whom there is some suspicion of cancer. The examining doctor can then refer these to appropriate hospitals or specialists; or, if he feels competent and has the time, energy and interest, he may endeavour to complete the diagnosis himself, with the aid of the ancillary services, especially radiologists and pathologists. He must always remember that one month is the extreme limit of time that should be allowed to pass before a definite diagnosis is achieved; and the sooner treatment is commenced, the better the patient's chances.

Diagnosis.

Cancer deaths in Australia are distributed in the following proportions: skin, 2·5%; breast, 10·0%; uterus and ovaries, 3·5%; alimentary canal and digestive organs, 50%; renal and male genito-urinary system, 12%; lung, 10%. These constitute approximately 90% of all cancer deaths. The intelligent use of the cancer detection examination should result in the diagnosis of the vast majority of these in a still curable stage.

Take for example gastric carcinoma, a common cancer, classically diagnosed too late for cure. If a patient has a family history of cancer of the stomach or a predisposing disease such as pernicious anæmia and achlorhydria, he should be examined more frequently and more minutely. If he is checked for suspicious symptoms of any sort, including general symptoms, for a palpable mass in the abdomen, for occult blood in stools, and for anæmia, and if he is instructed to report promptly any suspicious symptoms that may occur between examinations, it is unlikely that any cancer of the stomach will progress far before it is detected. Results at the Mayo Clinic (Comfort *et alii*, 1954) have shown a 71% five-year survival for patients with gastric carcinomata two centimetres or less in diameter.

It is true that cancer of the pancreas (4%), of the liver and bile passages (2%) and of bone (1%) are not likely to be diagnosed early enough to yield a substantial five-year survival rate. Fortunately, they constitute less than 10% of the total.

Classical Signs.

It is high time that the so-called classical signs of malignancy as described in text-books were forgotten. They constitute the hallmarks of advanced, probably hopeless cancer, and they should never be seen. In particular, no doctor should ever wait for their appearance before considering the diagnosis of cancer. There is no place for watchful expectancy in cancer detection. There are only two signs of cancer that matter: first, any sign (or symptom) that leads the doctor to consider cancer as a possibility; and secondly, the pathologist's report on the tissue under suspicion. Granted this is an over-simplication, but it illustrates an attitude of mind that is essential if the cancer problem is to be solved. The discovery of other disease does not exclude the coexistence of cancer.

Biopsy.

It is becoming increasingly apparent that cancer detection depends largely upon biopsy. If a cancer is to be diagnosed while it is still minute, there is no other method of determining its nature. In a few tumours, biopsy is generally contraindicated, notably osteogenic sarcomata and testicular tumours. In deep-seated tumours, biopsy with frozen section examination will normally be a preliminary part of the therapeutic operation.

In all cases of biopsy it is desirable to remove the whole lesion for examination rather than to cut through it. Especially is this the case in melanomata. Where the biopsy excision is likely to be the only operative procedure, it should be as adequate as circumstances will allow. However, if it is to be followed by a truly radical operation in the case of malignancy, then the biopsy should be strictly within cosmetic limits.

All available evidence indicates that the results of cancer treatment are in no way prejudiced by biopsy, provided that definitive treatment follows within a few days. If there is any risk in biopsy, then it must be accepted and minimized by perfection of technique.

There can be no efficient and adequate treatment of cancer without biopsy. To perform radical surgery or to give deep X-ray therapy for a suspected cancer, or to decide that it is non-malignant and withhold treatment without a biopsy should be regarded as *prima facie* evidence of malpractice.

Cancer Prevention.

The cancer detection examination is also an opportunity for the doctor to practise effective cancer prevention (i) by removing all premalignant lesions, leukoplakiæ, hyperkeratoses, multiple polypi, active junction melanomata and all lumps; (ii) by clearing up chronic infections, e.g. repairing tears and cauterizing erosions of the cervix; (iii) by grafting large burns; (iv) by advising or performing total rather than subtotal hysterectomies, circumcision of male infants and correction of ectopia of testicles; (v) by correcting avitaminosis.

A doctor should also advise the patient (*a*) to avoid excessive sunshine or unnecessary radiation, especially if the skin is fair; (*b*) to avoid unnecessary or repeated contact with tar, oil, petrol, smoke, dust, dirt and chemical fumes; to avoid smoking, especially cigarettes; to live in the country in preference to the city; (*c*) to avoid excess of food, alcohol or tobacco; to relax at meal times, get plenty of vitamins and avoid obesity; (*d*) to keep the mouth clean, and the gums and teeth or dentures in good order.

Treatment.

It is not necessary to discuss the treatment here other than to say that it should be prompt and adequate. The treatment of cancer is just as urgent as that of acute appendicitis. Delay is none the less fatal because its results are not immediately apparent. Early diagnosis and a small lesion must not be made the excuse for inadequate treatment.

Results.

I have been practising cancer detection in Melbourne for 12 years. During that time, whether they have first presented themselves to me in the last stage or intermediate stages, or whether they have been discovered in cancer detection examinations, I have seen 53 cases of cancer. Twenty-nine of these patients presented with cancer in advanced stages; 11 had been diagnosed and received treatment elsewhere before coming to me. Twenty-six ultimately died of their cancers, only four of them surviving for five years or more, while two with cancer of the prostate and one with epithelioma of the skin remain alive under medical treatment after 10 years, 12 months and three months respectively. The remaining 24 cases were diagnosed at an early stage, either in cancer detection examinations, or by the patients themselves reporting symptoms either of their own initiative or following instructions between annual examinations. Of these 24 patients, four have died through causes other than their original cancer, two after surviving five years or more; and 20 are living at the present time (December 31, 1957) without evidence of recurrence, 15 having survived for five years or more.

Proportion of Five-Year Survivals.

Of the 28 cases diagnosed by myself before December 31, 1952, including those patients who presented with obvious symptoms of advanced cancer, 20 survived for five years or more, which is approximately 70% of the total (seven died from or with recurrence of their cancer, one from coronary occlusion without evidence of recurrence) (Table I).

This proportion of five-year survivals in all my cancer cases is better than the usual results of 20% or 25% (London 19·2%, Connecticut 27%). In the 19 cases diagnosed by cancer detection methods before December 31, 1952, one patient died within five years from coronary occlusion (the above-mentioned case), two died without recurrence of cancer after more than five years, and 16 are living at the present date without evidence of recurrence: this survival rate is so high that it cannot be expected to continue.

The whole group of 53 cases was distributed by site as shown in Table II.

Formal cancer detection has not been practised for very long, so that reports of five-year survival rates are not common, and I have come across only one series. The Philadelphia Cancer Detection Clinic published, in May, 1957, its results, which show a 70% over-all survival rate in 108 cases of cancer.

If we may discount the abnormally high survival rate in the small series of my cancer detection cases reported earlier, what is known of the frequency of the various types of cancer and their curability under the best conditions suggests that 80% is a possible, and 75% a practicable, goal to set.

Magnitude of the Problem.

At the present time 12,000 people are dying in Australia every year from cancer. This number has doubled in the last 25 years. As it is increasing by about 3% each year, it will double again in the next 25 years. Generalized neoplasms, leukæmia, Hodgkin's disease, etc., account for less than 1000 of these deaths. Early detection is no help with this group.

Table I.

Table of Survivals for Five Years and Over.

Survival Period in Years.	Number of Cases.	Types of Cancer.
11	1	Adenocarcinoma of rectum.
10	4	Adenocarcinoma near anus; papillary carcinoma of bladder; adenocarcinoma of sigmoid colon; carcinoma of prostate.
8	4	Epitheliomata of neck and nose (2); carcinomata of breast (2).
7	3	Carcinoma of stomach[1]; carcinoma of rectum[2]; epithelioma of lip.
6	5	Carcinoma of œsophagus; epitheliomata of hand (2); carcinoma of transverse colon[2]; carcinoma of appendix.[2]
5	3	Sarcoma of arm; papillary adenocarcinoma of cervix; carcinoma of descending colon.
Total ..	20	

[1] The patient died from other causes with no evidence of recurrence.
[2] The patients died of cancer.
Apart from these four patients, the remaining 16 are still alive.

Over-all mortality rates for cancer are difficult to obtain. In London, from 1938 to 1952, the five-year survival rate was 19%. In Connecticut, United States of America, from 1935 to 1947, the rate was 27%. Figures for the United States of America as a whole are estimated to have been about 25% 20 years ago, and to be about 32% at the present time.

Table II.

Sites of Cancer and Survival Time of Patients.

Sites of Cancer.	Number of Cases.	Survival Time of Patients.			
		0 to 4 Years.		5 to 12 Years.	
		Living.	Dead.	Living.	Dead.
Anus, large bowel and appendix	11	1[1]	2	6[1]	2
Skin, including three malignant melanomata ..	8	1[1]	2	5[1]	—
Breast	5	—	1[1]	4[1]	—
Prostate ..	7	1	5	1	—
Stomach ..	4	—	3	—	1[1]
Uterus	3	1[1]	—	1[1]	1
Pancreas ..	2	—	2	—	—
Lip	3	1[1]	1[1]	1[1]	—
Sarcoma ..	2	—	1	1[1]	—
Gall-bladder ..	1	—	1	—	—
Ovary	1	—	1	—	—
Thyroid ..	1	—	1	—	—
Larynx ..	1	—	1	—	—
Tonsil	1	—	1	—	—
Bladder ..	1	—	—	1[1]	—
Lung	1	—	1	—	—
Œsophagus ..	1	—	—	—	1[1]
Total ..	53	5	23	20	5

[1] Without evidence of recurrence.

We should not err greatly if we estimated the present over-all five-year survival rate in Australia as not greater than one-third, or 33%. The figures of the Victorian Anti-Cancer Council for Melbourne public hospitals support this figure, that is, 24·5% five-year survival rate for cancer, excluding skin cancer.

This would mean that the death within five years of 66% of all cancer patients is responsible for 11,000 deaths *per annum*. The above-mentioned figures suggest that it is possible to reduce this toll to a half or even a third of its present figure.

Cancer Detection Clinics.

It is well known that cancer detection can be practised successfully in special clinics. What is not so well known is that it can be done equally well by a practitioner working in his own practice among his own patients with his own instruments. There is no necessity for new or expensive buildings or groups of specialists. It is essential that the practitioner have sufficient enthusiasm and determination to take what steps are necessary to ensure annual examination for as many patients as possible, and to make sure that every possible case of cancer is followed up and the diagnosis completed without delay.

Any qualified medical practitioner is capable of making the examination if he wants to. Any person can avail himself or herself of it, provided the doctor can be found who will do it. The simplest way to guide the patient to the doctor would be by a distinguishing mark in the pink pages of the telephone directory, or by an appropriate sign to be displayed by the doctor who wants to make the examination. Some form of guidance is absolutely essential.

It would be a grave mistake to whip up a public demand for the cancer detection examination and then have the seekers rebuffed by doctor after doctor until they give up the search in disgust or despair. This would have a permanent ill effect upon any anti-cancer campaign.

Only when provision has been made by the medical profession for such a demand, and the patient has been enabled to find his way to the examining doctor, will there be scope for outside assistance. This can come from government, philanthropic or business sources in the form of money, publicity or other appropriate means.

Summary.

1. Cancer kills over 12,000 persons in Australia each year.
2. At present, about 30% of all patients survive for five years or more.
3. My figures suggest that a survival rate of upwards of 75% is attainable by early diagnosis when patients cooperate.
4. Early diagnosis can be achieved by annual cancer detection examination and education in prompt reporting of signs and symptoms.
5. Enough is known now to prevent many cancers.
6. These measures are practical; they can be done and they are being done without outside help and without charity.
7. Government, philanthropic and other assistance can speed the process.
8. Cancer detection and prevention should not be divorced from the care of the health of the whole person, and from general preventive medicine for the individual.

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Appendix I.

Ham's Occult-Blood Test.

Any faeces that can be withdrawn on the gloved finger is smeared on to a filter paper.

Ham's Solution *A*: 1% benzidine dihydrochloride (1·0 gramme in 20 millilitres of glacial acid, 30 millilitres of distilled water, and 50 millilitres of ethyl alcohol).

Ham's Solution *B*: 3% hydrogen peroxide. Place four drops of solution *A* then four drops of solution *B* on to fecal smear. Read the colour at 60 seconds; disregard the colour in a ring at the edge of the solution—note the colour over the fecal smear. Faint blue, +; slight blue, ++; definite blue, +++; deep blue, ++++. A 1:100 dilution of blood will give +++. Filter paper should be laid on clean glass or porcelain, etc., as a table-top may give a false positive result.

The test itself can easily be done by a nurse. Making the smear adds only a few seconds to the examination time.

Appendix II.

Cervical Smear.

The technique of testing a cervical or vaginal smear is quite easy. A six-inch curved pipette with a smooth tip and small orifice approximately one millimetre, easily and cheaply made from glass tubing, with a firm rubber suction bulb, is used to aspirate material from the cervix preferably or from the posterior fornix or from both. This is then forcibly expelled on to one or two slides; it may be spread with the curve of the pipette to produce a smear having both thick and thin parts. This is immediately fixed in equal parts of 95% alcohol and ether for a few minutes, and they may be left in this solution for up to a week.

They may be mailed in a square bottle or suitably shaped container with this solution, each slide kept separate by an ordinary paper clip attached to alternate ends; or a drop or two of glycerine may be placed on the smear on removal from the solution and before drying, covered with another clean slide and mailed in this condition.

The patient should not have used douche or vaginal medication in the preceding 24 hours. The speculum should be inserted without lubricant, or moistened with warm water, and the taking of the smear should precede digital examination.

Satisfactory results have been obtained using ordinary cotton wool on a stick applicator instead of the pipette.

THE DECLINE OF FILARIASIS IN QUEENSLAND.

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In the 20 years between 1937 and 1956 there were 56 admissions for filariasis at the Brisbane General Hospital. Only 37 patients were involved, some having been admitted to the hospital from two to seven times. None of these had a recent infection, and microfilariæ were not found in any of them. Most of them had been born in Queensland, and most gave a history of filariasis 20 to 40 years earlier. Even the youngest patients gave histories of 13 to 18 years, one of them having acquired the infection in New Guinea. The clinical features included chyluria, hæmaturia, lymphangitis, cellulitis, œdema of the legs and elephantiasis, which were regarded as late manifestations of the disease.

It was surprising, then, to hear of acute filariasis, with numerous microfilariæ in the blood, in a Mackay resident in December, 1956. The question was raised whether there were unrecognized foci of infection in coastal Queensland.

A survey was therefore made in June and August, 1957, of unselected patients in the district hospitals and of nurses and other volunteers at Cairns, Babinda, Innisfail, Tully, Ingham, Townsville, Mackay and Rockhampton. Filariasis surveys had also been carried out among Australian aborigines and Torres Straits islanders by members of the Institute's staff at various times between 1949 and 1956, whenever the opportunity presented itself. The results of these will be included, and the recent findings will be compared with those of earlier workers.

Methods.

Two methods have been employed. One was the immediate examination of a large drop of fresh blood, and the other the preparation of a large, thick drop, which was processed and examined later. The latter method was used exclusively in the 1957 survey. In this method, approximately 20 cubic

millimetres of blood were taken from the finger and spread over an area about the size of a shilling. The slide was allowed to dry in the horizontal position and stored in a dry place, usually over silica gel, for one or more days. The film was laked by standing vertically in distilled water, dried, fixed in methyl alcohol, stained in dilute Giemsa's stain for an hour and a half, washed and dried. It was then covered with immersion oil, a large cover slip applied, and the whole area examined under a 16-millimetre objective.

Blood was collected from 8.30 p.m. onwards, the majority of the films being collected between 9 p.m. and 10 p.m. When wet films were examined, the time of collection was usually from about 10 p.m. to 1.30 a.m.

Reliability of the Procedure.

Microfilariæ of *Wuchereria bancrofti* show a well-marked nocturnal periodicity, but they do not disappear entirely from the peripheral circulation by day. There is much evidence that they steadily increase in numbers from 5 p.m. onwards. Many workers have recorded considerable counts made during the early part of the evening (Breinl, 1913; Walker, 1924; Sweet, 1924*a*; Heydon, 1931; Knott, 1939). Sweet (1924*a*) paid particular attention to this point. Counts from known carriers were made over twenty-four-hour periods, and five to nine readings obtained for each hour. Maximum counts occurred at 2 a.m. and 4 a.m. As a result of these observations, Sweet wrote: "The chances of finding microfilariæ in the peripheral blood from 7 o'clock onward seem to be very good, and they may be found in a great many cases at 6 p.m. . . . A still greater degree of accuracy in results would be obtained if the collection of blood slides was made between 8 p.m. and 6 a.m. The Hookworm Campaign in its routine work adopted the hour of 9 p.m. at which to start the collection of blood slides. This hour would seem to be entirely safe as far as the accuracy of the results are concerned."

The standard amount of blood (20 cubic millimetres) can be satisfactorily examined as a laked and stained thick smear in seven to eight minutes. If, however, this amount of blood is to be examined wet, it must be distributed under three or four seven-eighths inch square cover slips, and the time of examination correspondingly lengthened. It is, therefore, at least three times as sensitive as single drop examinations.

Results of the 1957 Survey.

The following are the numbers of specimens examined from the various centres—all gave negative results: Cairns, 163; Babinda, 29; Innisfail, 97; Tully, 44; Ingham, 30; Townsville, 197; Mackay, 120; Rockhampton, 78. This makes a total of 758 specimens.

The ages of the subjects ranged from five to 87 years, but only nine children aged under 13 years were included. Nearly all were of European descent.

Results of 1949 to 1956 Surveys.

The results of the examination of nocturnal blood films at various native settlements are set out in Table I.

Of the two infections found, one was in a native of Murray Island who had travelled about a good deal, being a member of a lugger crew; the other was in a half-caste at Thursday Island who had travelled widely in north Queensland and the Northern Territory. It is therefore impossible to say where they had contracted their infections. There was, at one time, a focus of infection at Murray Island, but by 1953 the only clinical evidence was the presence of mild elephantiasis in several elderly people.

Previous Findings.

Filariasis caused much morbidity among the residents of Queensland, particularly those of Brisbane, during the last three decades of the nineteenth century and the early part of the present century. Flynn (1903) stated that he had seen 60 cases in the previous five years. He considered that the disease "threatens to become a national curse". McLean (1910) stated that he had been much impressed from 1900 onwards by the prevalence and crippling effects of the disease. The same author carried out the first survey among unselected patients in the Brisbane General Hospital. He examined 200 every three months, beginning in July, 1908. The examinations were made between 10.30 p.m. and midnight. During 1908 and 1909, he found 130 carriers among 1200 persons examined (that is, a 10·8% rate of infection). Many were asymptomatic.

Croll (1919) reported the results of examination of 4000 persons in the Brisbane General Hospital in 1909 to 1910, 11·5% being infected. He also reported that 5% of 112 children under 12 years of age in the Brisbane Children's Hospital were likewise infected.

Derrick (1938) examined 228 patients in the Brisbane General Hospital in January and February, 1938. His examinations were made between 9.30 p.m. and 1.30 a.m. No infections were found. The same author (Derrick, 1944) found that 17 out of 252 patients at the Mental Hospital, Goodna, were infected (a rate of 6·7%). By 1949 the disease was evidently dying out there, as only two infections were found in 51 patients, including many who had been found to be infected at the previous examination (Mackerras and Mackerras, 1949).

Row (1952) reported that 52 patients with chyluria had been treated between 1938 and 1950. No microfilariæ were found in blood or urine, but the clinical features were regarded as late manifestations of filariasis.

TABLE I.

Examination of Nocturnal Blood Films in Various Native Settlements, 1949 to 1956.

Place.	Number of Subjects Examined.	Number of Subjects with Microfilariæ.
Murray Island	117	1
Darnley Island	75	0
Yorke Island	120	0
Coconut Island ..	42	0
Yam Island	2	0
Saibai Island	53	0
Boigu Island	47	0
Mabuaig Island ..	57	0
Badu Island	73	0
Moa Island	52	0
Thursday Island ..	6	1
Cowal Creek	65	0
Bamaga	87	0
Lockhart River	85	0
Mapoon	27	0
Weipa	45	0
Aurukun	50	0
Mornington Island ..	62	0
Unspecified	29	0
Total	1094	2

TABLE II.

Examination of Nocturnal Blood Films in Various Centres, 1922 to 1924.

Place.	Number of Subjects Examined.	Number of Subjects with Microfilariæ.	Percentage.
Cairns City	235	4	1·7
Cairns (aborigines) ..	229	2	0·9
Babinda-Gordonvale ..	317	0	0
Innisfail	39	2	—[1]
Ingham	200	4	2·0
Townsville	1058	16	1·5
Mackay	238	5	2·1
Rockhampton	300	11	3·7
Total	2616	44	1·6

[1] Figures are too small for significance.

In Townsville, Breinl (1913) examined 226 patients in the General Hospital over a period of three months in 1911, and found seven (or 3·1%) infected. Cilento and Richards (1924) gave figures for the incidence in patients in the same hospital. Blood films were collected on five occasions between December, 1922, and August, 1923. Ten infections were found in 271 persons (3·7%). Derrick (1940) found three infections in 98 patients in 1940, a rate of 3·1%, practically the same as those reported before.

Sweet (1924*b*) reported the results of the survey carried out by the staff of the Hookworm Campaign in 1922 to 1924. In Queensland, 373 infections were found in 14,362 persons (2·6%). In the Brisbane area, 199 infections were found in 3962 persons, which is a rate of 5%, one of the highest in the State.

The 1922 to 1924 figures for the districts which were included in the recent survey are given in Table II for comparison.

Sweet (1924*b*) reported 18 infections among 1177 persons examined in the "Northwestern District". This survey included people from Cloncurry, Camooweal and Normanton, and aborigines from the Cape York Peninsula. The infection rate was 1·5%.

Discussion and Conclusions.

The infection appears to have been more abundant originally in the southern part of Queensland than in the northern parts. It extended into the northern rivers district of New South Wales, was frequently found in the coastal strip from Brisbane to Rockhampton, and then gradually diminished northwards. There is no evidence that the Cairns-Gordonvale-Babinda area ever had a high rate. The results of the Hookworm Campaign in 1922 to 1924 showed a very low rate, and Heydon (1927) could not find a case in the Cairns district. His examination of 249 persons included a number of aborigines from Yarrabah and Mossman.

Filariasis seems to have been essentially an urban disease, developing in and spreading from areas of white settlement. Heydon (1931) found no evidence that the disease was present in the nomadic aboriginal inhabitants of the country. In 1922 to 1924, the infection rates in white and coloured people were approximately equal (Sweet, 1924*b*).

The disease began to decline in Brisbane between 1910 and 1922, and had become virtually extinct by 1938, except for a focus of infection in the Mental Hospital at Goodna.

The map published by Sweet (1924*b*), in which the whole of Cape York Peninsula and a narrow coastal strip extending into northern New South Wales is hatched to indicate endemic filariasis, should now be replaced by one without any hatching.

How the patient of Mackay became infected is, of course, unknown. He must have been bitten by one or more infected mosquitoes at the beginning of 1956 or earlier. Perhaps a visitor, possibly a seaman, was the source of infection. It must be remembered that pearling luggers come into the Pioneer River. The vector, *Culex fatigans* Wied., is abundant at Mackay, reaching plague proportions at times in some localities, where it breeds in creeks polluted by the waste from sugar mills.

The reason for the remarkable decline in filariasis in the last 50 years is not at all obvious. It is certainly not due to treatment, because the disease had practically disappeared before any useful drugs became available. It is not due to the disappearance of an efficient vector, because *C. fatigans* is still abundant in many districts. Possibly the reduction in mosquito breeding by the cleaning up of domestic breeding places and by drainage contributed to the decline. Perhaps the more general use of mosquito nets succeeded in breaking the cycle. There has been a gradual replacement in some localities of *C. fatigans* by an allied species, *C. pipiens australicus* Dob. and Drum., which breeds away from houses and which is probably a native species.

It appears that filariasis flourishes when there is continuous and heavy transmission, implying an abundance of hosts. This in turn depends on extensive breeding places, and on a mild, humid climate favouring the survival of the mosquito. It is possible that even small changes in the environment may reduce the populations or longevity of the mosquitoes sufficiently to tip the balance against the parasite.

There is little information about the longevity of the adult worms, and they may occasionally live for many years. However, Jachowski *et alii* (1951) considered that microfilariæ persisted less than 10 years after the removal of the host from an endemic area. Actually, they had disappeared at five years in the majority of persons examined, but in a few people microfilariæ were still present after six years' residence in a non-endemic area. These authors were dealing with the non-periodic form of the parasite, but it is probable that the periodic form would live for approximately the same length of time.

Summary.

Filarial infection was common in Queensland 50 years ago. Clinical cases are now rare, and patients with microfilariæ in the blood stream are extremely rare.

The examination at night of the blood of 1852 persons in many localities in coastal Queensland revealed only two asymptomatic carriers, both coloured men from the Torres Straits Islands.

The reasons for the decline are obscure, but it may have been due to minor changes in the mosquito populations or in their access to susceptible subjects.

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A DUAL ROLE FOR CALOMEL IN THE ÆTIOLOGY OF PINK DISEASE.

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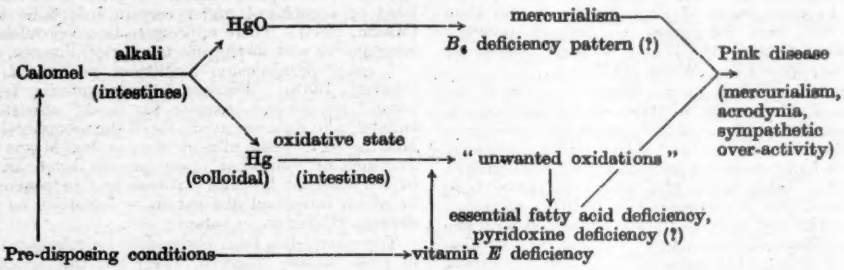
EVIDENCE has been presented in previous papers (Barrett, 1957*a*, 1957*b*) that calomel is the specific ætiological factor in pink disease and not mercurials in general, and that the reactions to calomel can be explained on a rational, toxicological basis. Calomel is decomposed in the alkaline intestines to two separate substances, mercuric oxide and finely divided mercury, each with different chemical properties, mercuric oxide being responsible for the mercurial symptoms and colloidal metallic mercury for an oxidative state of the intestines in the absence of sufficient tocopherol (vitamin *E*). A tentative hypothesis may be represented diagrammatically as shown at the top of page 705.

Thus calomel has unique chemical properties not shared by other usual sources of mercury. A new concept is presented: that calomel plays a dual role in the ætiology of pink disease. However, there are several possibilities with regard to pyridoxine, namely, that mercuric oxide poisons a vitamin B_6-containing enzyme, or that pyridoxine is oxidized in the intestines under oxidative conditions, or both.

In accordance with the abovementioned working hypothesis, experiments were initiated (*a*) to test the toxicity of ingested calomel in the absence of tocopherol, and (*b*) to provoke acrodynia by the administration of calomel to rats in the fasting state, which were fed a fat-free, tocopherol-free diet containing pyridoxine.



Experimental Investigation.

Male albino rat weanlings, 35 to 45 grammes in weight, were used, litter-mates being separated into groups as evenly as possible with regard to weight and age. The rats were housed separately in small, wire-mesh cages. The temperature was maintained fairly constant at 75±5° F.

The basal diet consisted of sucrose, 67%; fat-free casein, 22%; ether-extracted yeast fortified with thiamin hydrochloride and riboflavin, 4%; salts, 4%; agar, 3%. A drop of halibut liver oil was administered to each rat weekly to provide vitamins *A* and *D*. This diet was deficient in essential fatty acids and tocopherols.

A preliminary factorial experiment was carried out to test the additive toxic effect (interaction) of ingested calomel on rats fed the foregoing basal diet. After a week's conditioning period on the basal diet, four weanlings were taken from each of four litters, each rat receiving one of the following four treatment combinations: Group I, basal diet; Group II, basal diet *plus* calomel; Group III, basal diet *plus* vegetable oil; Group IV, basal diet *plus* vegetable oil *plus* calomel.

TABLE I.
Preliminary Factorial Experiment.

Group.	Average Body Weights (Grammes) at Intervals of One Week.								Average Weight Increase in Grammes.
	−1	0	1	2	3	4	5	6	
I	41	49	54	61	67	74	80	86	45
II	40	49	55	61	64	66	69	69	29
III	39	47	51	63	66	74	83	90	51
IV	40	50	54	60	66	72	79	87	47

All the rats were fasted overnight twice a week (Mondays and Thursdays), and Groups II and IV were given a calomel suspension from a graduated dropper the following morning. All rats were fasted a further five hours. The calomel dose was a body weight equivalent of one dose of calomel teething powder daily (eight milligrammes per kilogram of body weight). The rats were weighed weekly.

Average weekly body weights are given in Table I. Statistical analysis revealed a considerable additive toxic effect (interaction) of ingested calomel on rats fed a basal diet deficient in essential fatty acids and tocopherol.

Another experiment was carried out to provoke calomel-induced acrodynia in rats fed the basal diet containing 4% fortified yeast. The experimental conditions were continued for Groups I and II only. Increased difficulty was experienced with oral administration of the calomel dose, which was then given through a stomach tube.

The results are presented in Table II. After 13 weeks on the fat-free diet, the control rats (Group I) showed only slight scaliness of the feet. One of the test rats (in Group II) suddenly lost considerable weight and died at the end of the seventh week. Analysis of the liver for mercury revealed only 0·5 milligramme of mercury per 100 grammes of liver. Similar mercury levels were obtained in the other rats at necropsy. It would appear that, since the amount of mercury recovered from the tissues was relatively small, the additive effect in the factorial experiment was due to colloidal mercury from ingested calomel acting as a pro-oxidant in the intestines in the absence of tocopherol.

Two of the remaining three rats developed the symptoms of the double (pyridoxine-essential fatty acid) deficiency disease described by Medes and Keller (1947), including the haunched stance and priapism (Table II).

Column two shows the duration of the exposure to the deficient diet, excluding the conditioning period of one week.

The xanthurenic acid test, without tryptophane load, gave negative results in all cases.

Discussion.

In these and previous studies (Barrett, 1957*b*) it has not been possible to reproduce reactions to ingested calomel consistently, due to the difficulty of obtaining a sufficiently high intestinal alkalinity to decompose it readily to its toxic products. However, it is considered that the occasional and varied adverse reactions to repeated ingestion of calomel produced experimentally in laboratory animals and recorded in the medical literature in infants are due (*a*) to an alkaline state of the intestines in some cases, and (*b*) to an alkaline and oxidative state of the intestines in others. In other words, adverse reactions to calomel will vary in nature and in intensity according to the alkaline and oxidative state of the intestines.

It is doubtful whether an allergy to mercury ever produces pink disease. Holzel and James (1952) could find no evidence that pink disease is an allergic response to mercury. A dual role for calomel, namely, mercuric oxide responsible for the chronic mercurial symptoms by poisoning a sulphydryl enzyme, and colloidal metallic mercury acting as a pro-oxidant in the absence of sufficient tocopherol, explains the mystery of calomel and most cases of pink disease.

TABLE II.
Calomel-Induced Acrodynia on a Fat-Free Diet.

Rats.	Weeks.	Initial Weight.	Maximum Weight.	Final Weight.	Symptoms.
Group: I (4 controls)	12	49	122	122	Slight scaliness only.
Group II:					
Rat Number 1	7	50	67	48	Died suddenly, no acrodynic symptoms, liver mercury 0·5 milligramme per 100 grammes of wet tissue.
Rat Number 2	12	50	88	75	Marked scaliness, loss of fur, priapism, haunched stance, obviously sick.
Rat Number 3	12	47	93	93	Scaliness, loss of fur, no priapism.
Rat Number 4	12	49	93	73	Same as Number 2, also swelling of feet with open sores.

Further supporting evidence that calomel is the specific ætiological factor in most cases of pink disease is the time relation between the first references to calomel powders (*Australasian Medical Gazette*, 1881) and to pink disease in Australia (1883), *vide* Wood and Wood (1935).

There appear to be only two known diseases in which the symmetrical bilateral dermatitis of the extremities occurs, namely, pink disease (infantile acrodynia) and rat acrodynia, which was named by Birch, György and Harris (1935), "without prejudice as to its identity or otherwise with human acrodynia". Vitamin B_6, essential fatty acids and tocopherol have been shown to be factors in rat acrodynia. Birch (1938) suggested that one of the functions of vitamin B_6 was connected with the utilization of the unsaturated fatty acids. This has been verified experimentally by Witten and Holman (1952). It would appear that vitamin B_6 acts as a coenzyme in the enzymic conversion of linolenic to arachidonic acid and of linolenic to hexaenoic acid, possibly in the liver. The specific function of tocopherol in this reaction is unknown, apart from its general role as an anti-oxidant.

It is well known that various common metals and alloys make fats rancid, particularly copper and iron, which are active in concentrations of a few parts per million. However, the surface area of the metal is also an important factor in the production of oxidative rancidity. Stable hydrosols of mercury, silver, gold and copper can be prepared *in vitro*, by using protective colloids such as dextrins, glycogen, gums and the alkali degradation products of albumin (Weiser, 1933). It is reasonable to assume that colloidal deposits of metallic mercury would be formed under alkaline conditions in the intestines from calomel, in accordance with this hypothesis. In this connexion, it is of interest to recall the concept of Swift (1914) that pink disease is due to intestinal toxæmia, giving rise to an angioneurosis.

The possibility of the oxidation of pyridoxine by colloidal mercury in addition to linoleic acid and the tocopherols must be considered. For example, Burr and Barnes (1943) and Mattill (1946) suggested, on chemical grounds, that certain other vitamins, including pyridoxine, might be oxidized by rancid fat. If so, large amounts of pyridoxine should be curative in pink disease. However, reports in the literature are contradictory. It is possible, in accordance with the hypothesis, that mercuric oxide poisons a vitamin B_6-containing enzyme, in which case dimercaprol but not pyridoxine would be curative; or that pyridoxine is oxidized in the intestines under oxidative conditions, in which case pyridoxine in large doses but not dimercaprol would be curative.

There is some evidence that pyridoxine deficiency in infants is not as rare as formerly supposed. Bessey (1957) reported several cases, including breast-fed infants; also two cases in which abnormally large amounts of pyridoxine were required, and which are examples of conditioned deficiency. Frazer (1949) also referred to conditioned vitamin deficiencies, including pyridoxine sometimes seen in the sprue syndrome under conditions of hypochlorhydria and achlorhydria, which encourage high-level invasion of intestinal bacteria.

Burr and Barnes (1943), referring to Whipple's "oxidized fat syndrome" due to rancid cod-liver oil, stated: "The peroxidation of unsaturated fats naturally destroys linoleic acid. The feeding of such oxidized fats has been shown to result in the development of skin changes in rats and dogs, suggestive of linoleic acid deficiency, but in a much more severe form than that ordinarily produced by exclusion of the essential fatty acids."

Hickman, at the Fourth Conference on Biological Anti-oxidants (1949), cited an experiment by Mason. Silver nitrate was added in very dilute solution to the drinking water of rats in order to dye the tissues with reduced silver. If they had sufficient tocopherol, they could withstand the silver nitrate treatment. Hickman interpreted the findings in terms of colloidal silver acting as a pro-oxidant in the absence of sufficient antioxidants; Mason (1954) interpreted the findings in terms of metabolic stress.

There is evidence of vitamin *E* inadequacy in early life (Mason, 1954). György's hæmolysis test (1952) demonstrates low physiological levels in new-born infants. In this connexion, Cheek's observation (1953) of oxyhæmoglobin in the plasma of infants with pink disease may be significant. Mason and Dju (1953) have shown that there is no significant storage of tocopherol during the first three years of post-natal life. Cow's milk has a considerably lower tocopherol content than human breast milk (Mason, 1954), which appears to be significant in view of the age incidence of pink disease. There is also evidence of increased need of tocopherol under certain metabolic stress conditions (Mason, 1954). There appears to be no provision, therefore, for emergencies such as the effects of prior illnesses, marked anorexia and other predisposing conditions postulated in pink disease (Barrett, 1957*a*). Further, infants suffering from pink disease have "an evident distaste for food" (Swift, 1914). Unfortunately, no data are available of the tocopherol levels of plasma and tissues in cases of pink disease, but Mason (1954) has cited evidence of somewhat lower plasma levels in clinic patients, in convalescent hospital patients and in patients with diseases in which intestinal absorption is defective, as in sprue, cœliac disease, diarrhœa in infants, etc.

Tocopherol has been claimed to be effective in the treatment of pink disease (Forsyth, 1941) but this requires confirmation with a larger number of subjects. It is suggested that tocopherol levels of plasma and also of tissues of infants who have died from pink disease should be included in biochemical studies of this disease.

There is little direct evidence of essential fatty acid deficiency in infants. However, Hansen and co-workers (1954) have presented considerable indirect evidence that an essential fatty acid deficiency may exist in infants with simple eczema and who are prone to respiratory infections. Nevertheless, it is difficult to conceive that such a deficiency could be due solely to dietetic errors, previous illnesses or malnutrition. Cow's milk, which is low in linoleic acid (Hilditch and Meara, 1944), could be a factor, as suggested by Hansen, who admits that there may be other factors. It is suggested, for further study, that one of these may be low tocopherol levels, together with pro-oxidants. For example, iron is a powerful pro-oxidant which requires an acid and a reductive phase for absorption and is therefore available to peroxidize fats if the conditions are abnormal. A further agent, which is suggested as the most important in pink disease, is colloidal mercury from ingested calomel, since this will also peroxidize the fats, in the absence of sufficient tocopherol, to produce the essential fatty acid deficiency which has been postulated in this disease. Further biochemical studies of pink disease are needed to follow up this point.

A study of the literature reveals that the signs and symptoms of sympathetic overactivity cannot be explained in terms of chronic mercurialism. Further, kidney damage appears to be rare in cases of typical pink disease. A renal origin, therefore, appears unlikely, particularly since calomel can produce mercurial nephrosis, atypical and typical pink disease in infants, and even these conditions at different times in the same infant. It is suggested, for further study, that sympathetic overaction arises from metabolic stress due to colloidal metallic mercury in the absence of sufficient anti-oxidants.

Sustained adverse conditions would probably be required for the development of a conditioned essential fatty acid deficiency. Such conditions appear to be present for the development of pink disease, for example, predisposing conditions such as hypochlorhydria and achlorhydria and previous illnesses from which the baby "never seems to have recovered completely", repeated ingestion of calomel powders, a course of iron therapy and other conditions favouring the oxidative state, including inadequate tocopherol.

Various treatments for pink disease have been suggested from time to time, including dimercaprol, liver, yeast, wheat germ, pyridoxine and tocopherol. However, it appears from the literature that the course of pink disease is unpredictable. It would be difficult, therefore, to assess the value of therapy in many cases. Further, the manifold and varied nature of the disease, the postulated dual role of calomel and the concept of conditioned deficiencies suggest wider and more intensive measures embracing several ætiological factors. A rational treatment for pink disease has been suggested (Barrett, 1957*b*), with added emphasis on vitamin *E*. However, it is pointed out that the cure of pink disease, like rat acrodynia and the Burr and Burr syndrome, may be slow.

Summary and Conclusions.

Further evidence has been presented in support of calomel as the specific ætiological factor in pink disease in Australia, instead of mercurials in general, except in a few cases.

A dual role for calomel, namely, mercuric oxide for the mercurial symptoms and colloidal metallic mercury as a pro-oxidant, has been postulated to explain, in the absence of allergy, the experimental findings and the varied adverse reactions of infants to ingested calomel. Adverse reactions to calomel

will vary in nature and in intensity according to the alkaline and oxidative state of the intestines.

The findings of these studies, as applied to pink disease (infantile acrodynia) from the repeated ingestion of calomel, are interpreted as follows. In the presence of abnormal amounts of alkali in the intestines of infants under certain predisposing conditions to pink disease, calomel is decomposed to (a) mercuric oxide responsible for the chronic mercurial symptoms by poisoning a sulphydryl enzyme, possibly a vitamin B_6-containing enzyme; and (b) colloidal metallic mercury responsible as a pro-oxidant, in the absence of sufficient tocopherol, for an oxidative state of the intestines, a conditioned essential fatty acid deficiency, a condition of metabolic stress and possible oxidation of pyridoxine.

The second of these biochemical mechanisms is suggested to explain the few non-calomel cases of pink disease in Australia, namely, that pro-oxidants other than colloidal mercury, in particular a course of iron, are responsible in the absence of sufficient tocopherol.

Certain biochemical studies of infants with pink disease are suggested.

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Reports of Cases.

STAPHYLOCOCCAL PNEUMONIA COMPLICATING INFLUENZA: REPORT OF A CASE.

By P. DEGOTARDI,

Sydney.

Clinical Record.

THE patient, a male laboratory technician, aged 31 years, had been suffering from influenza for two days. He consulted his local practitioner one evening after returning from work. He was found to have moist râles in all areas of his chest. He was sent to bed and given 250 milligrammes of tetracycline, to be taken orally every six hours. The following day his condition was considerably worse, and his admission to Parramatta District Hospital was arranged.

On admission to hospital, the patient was cyanosed and in obvious respiratory distress. His chest had moist, bubbling râles in all areas, and his respiratory rate was 36 per minute. His temperature was 100·4° F. and the pulse rate was 146 per minute; this was shown by an electrocardiogram to be a sinus tachycardia.

The following day the patient's condition was worse, his respiration was more distressed, the pulse rate had risen to 180 per minute and his temperature to 102° F. At this stage tetracycline therapy was discontinued, and he was given erythromycin tablets in doses of 250 milligrammes every six hours. Over the next 24 hours his temperature fell to 99° F. and his pulse rate to 96 per minute, but both then began to rise again, becoming constant with a temperature of 103·5° F. and a pulse rate of 124 per minute.

Sputum culture at this stage grew only non-specific organisms, mainly diphtheroids, but because of the tenacious nature of the sputum the patient had great difficulty in producing a specimen.

The results of hæmatological investigations were as follows: The hæmoglobin value was 12·5 grammes per 100 millilitres, and the white cells numbered 12,300 per cubic millimetre, 92% being neutrophils and 8% lymphocytes. An X-ray examination of the chest showed very extensive bronchopneumonia affecting both lungs.

On the evening of the third day of erythromycin therapy, the patient's temperature rose to 104·5° F., his pulse rate to 145 per minute and his respiratory rate to 28 per minute. He became extremely cyanosed and markedly distressed in his respiration.

Two hours later his condition deteriorated still further and intravenous therapy was started, hydrocortisone being added to the transfusion fluid. In view of the continued deterioration of his condition on erythromycin therapy, it was decided to administer large doses of penicillin and streptomycin. Accordingly, he was given doses of 4,000,000 units of crystalline penicillin and one gramme of streptomycin by intramuscular injection; this was followed by doses of 2,000,000 units of crystalline penicillin given intramuscularly every two hours and half a gramme of streptomycin given intramuscularly three times a day.

Three hours later the patient seemed to be moribund. He was unconscious, with gross respiratory obstruction caused by secretions. At this stage the patient's larynx was intubated with a McGill's tube, and copious amounts of purulent sputum were aspirated from the larynx whenever it accumulated. For the first hour he required almost continuous suction, but gradually the intervals between aspiration increased. His appearance improved from that of extreme cyanosis to a good colour over a period of about two hours. To assist drainage, the patient was laid flat with the foot of the bed elevated on 12-inch blocks.

Shortly after the introduction of the McGill's tube the patient became profoundly shocked. His blood pressure fell to 60/30 millimetres of mercury, and he responded only to nor-adrenaline added to the transfusion fluid; the blood pressure eventually became stabilized at 120/80 millimetres of mercury with eight ampoules of nor-adrenaline added to each litre of the transfusion running at a rate of 40 drops per minute. Three hours after intubation the patient was able to signify that it was difficult for him to tolerate the tube. He was reassured and told that it was necessary, and he nodded in agreement. One hour after this he could no longer tolerate the tube and it was removed.

During the intubation period his temperature fell from 104·5° F. to 99° F., his pulse rate from 145 to 85 per minute and his respiratory rate from 28 to 15 per minute. He lost his profound cyanosis, his colour remained good and he became conscious and rational. The amount of secretion aspirated was estimated at about 10 ounces during this period and was yellow in colour, viscid and tenacious.

Six hours after the administration of nor-adrenaline had started, the drip rate had to be slowed down, and half an hour later the transfusion was discontinued, except for a period of about one hour later during that day.

An X-ray examination of the chest later that day showed very extensive irregular consolidation of both lungs with elevation of the right diaphragm.

His condition improved very slowly; three days later he was digitalized, the dose of erythromycin was doubled and the

penicillin and streptomycin were discontinued and replaced by chloramphenicol in doses of 0·5 gramme taken orally every six hours, together with maintenance doses of hydrocortisone.

From then on, his convalescence was uneventful. X-ray examinations of the chest three days later showed considerable improvement, the lesions then being more discrete and consistent with a resolving simple inflammatory process. The following week he was afebrile, and an X-ray examination prior to his discharge from hospital showed only a generalized increase in lung markings with residual changes most marked at the right base.

He was discharged from hospital 27 days after his admission, on the twenty-ninth day of his illness. His subsequent progress has been good; two weeks after his discharge from hospital he was up and doing odd jobs about his home. He was feeling well and putting on weight, but still had occasional râles, predominantly on the right side of his chest.

Comment.

The main features of the case were the lack of response to tetracycline therapy and the slight response only to erythromycin therapy. When the patient was *in extremis*, penicillin was given in massive doses as a last resort, and the obstructing secretions were mechanically removed by suction through a McGill's tube inserted into the patient's trachea. The patient, although conscious for the greater part of the time, was able to tolerate this artificial airway for four hours. After the removal of these secretions, the condition of the patient improved, and he was able to make an uneventful recovery.

In view of this result in such a severe case, it may be reasonable to arrange artificial removal of tenacious secretions in all similar cases, possibly by elective tracheotomy early in the illness. Considering the response shown to massive doses of penicillin after failure of response to tetracycline and erythromycin, this may be the initial treatment of choice in such cases.

Summary.

An extremely severe case of staphylococcal pneumonia complicating influenza is described.

Recovery of the patient ensued after mechanical removal of tenacious secretions by aspiration through a McGill's tube inserted into the patient's larynx.

The administration of penicillin in massive doses seemed to be effective after there had been no response to tetracycline or to erythromycin therapy.

Acknowledgements.

I wish to thank Dr. Peter Waugh for his help in the presentation of this report and the staff of the Parramatta District Hospital for their cooperation.

Reviews.

The Dynamics of Anxiety and Hysteria: An Experimental Application of Modern Learning Theory to Psychiatry. By H. J. Eysenck; 1957. London: Routledge and Kegan Paul. Sydney: Walter Standish and Sons. 8¼" x 5½", pp. 326, with 61 illustrations. Price: 32s. (English).

THIS book concerns the experimental application of modern learning theory to psychiatry. The book is well illustrated and gives such a formidable list of references that confusion is created. It is often difficult for the reader to sort the dross in "classical concepts" from the gold in his "new theory".

The book's underlying thesis, involving the definition and measurement of basic features of personality, is simple, but, as might be expected, in view of so many conflicting theories, the gathering of experimental data, their correlation and presentation are extremely difficult and involved. We are introduced to complicated apparatus for conditioning experiments, rotors, Archimedes spirals and animal mazes. The results include the statistics necessary for gauging mathematical probabilities. The concepts of Pavlov, Hull, Mowrer and Freud *et alii* are dealt with in detail.

The author believes in two postulates. The first maintains that we have individual differences with respect to the rapidity with which excitation and inhibition occur. The second avers that such differences are correlated with the subsequent development of hysteria and dysthymic disorders of neurotic breakdown. The basic trends can be traced in the processes of socialization; they are mediated by conditioning; extroverts condition poorly and introverts condition particularly well. As introverts are in the majority, it is not difficult to visualize that the pace is set by extroverts and results in over-socialization within certain cultures. This accounts also for much social maladjustment, since some individuals are inherently difficult to influence by social or penal codes.

There is experimental evidence that the action of drugs such as "Dexedrine" and "Amytal" falls within the ambit of the excitation and inhibition hypothesis.

The concluding chapter on psychological theory and psychiatric practice does not make extravagant claims, but gives cogent reasons for more extended use of psychological methods. It is held that the swing to psychoanalytical therapy of the Freudian type has been too pronounced.

Cases are described in which the removal of single symptoms, such as a "tic", by purely psychological means changed the whole patient-symptom-syndrome. Such methods, involving a piecemeal approach to therapy, represent an enormous saving in time over those which involve a complete reorientation of personality. The author visualizes that psychologists will play a larger role in psychiatry. They will differ from the clinical psychologist of today by having a greater knowledge of the exact sciences, mathematics and experimental methods.

Dr. Eysenck is to be congratulated on a stimulating work, which has possibilities for a wide application.

Recent Trends in Chronic Bronchitis. Edited by Neville C. Oswald; 1958. London: Lloyd-Luke (Medical Books). Limited. 8¼" x 5½", pp. 106, with 72 illustrations. Price: 30s. (English).

THE outstanding impression left by this admirable book is of the invaluable contributions which may be made by workers in highly specialized fields who have a sound and critical clinical approach. The most informative chapters, yielding most to the clinician as well as to specialists in the respective fields, are those by the pathologist, the radiologist and the bacteriologist. They are also the most exciting, because all are based on original research. Dr. Lynne Reid's review of the pathology of chronic bronchitis is exhaustive and, as with all the papers, lucid. It is no mean feat to have achieved this when Figures 5 to 12 appear to be missing from the book. Dr. Reid's account of the pathology of bronchographic abnormalities is closely linked with Dr. George Simon's account of the radiology of chronic bronchitis. This chapter should be compulsory reading for all, physician, surgeon and radiologist, concerned with the management of patients with any bronchial disease. Bronchograms are almost everywhere under-interpreted in this country, but the conclusions stemming from the joint work of Reid and Simon are inescapable.

Robert May's work on the bacteriology of chronic bronchitis is well known, and its results are here presented in relation to the problems of antibiotic therapy. David Bates reviews the disturbances of pulmonary function in readily understood (and hence perhaps occasionally controversial) fashion. If any statement in the book is contentious, it is his advocacy of Leuallen and Fowler's estimation of mid-expiratory flow as a simple means of estimating ventilatory capacity. Their work has not been confirmed, and in our experience and that of others the test is unreliable. Whatever their failings, measurements of the volume of gas expired in the first second or thereabouts of a forced expiration possess several advantages over measurements made in mid-expiration.

Clinical aspects and management of chronic bronchitis are adequately dealt with by Neville Oswald from his considerable experience in charge of the bronchitis clinic at the Brompton Hospital. It is unfortunate that reference could not be made to the epidemiological study, necessarily more accurate in its presentation of the overall picture, recently published by A. G. Ogilvie and D. J. Newell.[1] Oswald's system of grading, based on mixed criteria, notably evidence of infection and of impaired exercise tolerance, could surely be improved by separate grading from the point of view of breathlessness. His emphasis on the evidence from the history as to the reversability of disability and his clear discussion of the role of allergy are particularly to be commended. Some may wonder at the tendency to include breathlessness as an integral part of the symptomatology of chronic bronchitis and others at his distinction between bronchospasm and

[1] M. J. AUSTRALIA, 1957, 2:473 (September 28).

asthma. These and others are fair matters for debate, which the author does not shirk.

It is inevitable that much of the book should be concerned with the problem of emphysema, and equally inevitable that the definitions adopted by the several authors should vary. The chapter on cardiac disease by Ronald Gibson relates particularly to emphysema, and due emphasis is given to the important diagnostic aid afforded by blood gas analysis. Mention of the Riley bubble technique is omitted from the methods. Other chapters, which maintain the high standard set by those already mentioned, are devoted to air poliution, to mucus and to the problems of bronchitis in general practice.

The book is very well produced, and the reproductions of the bronchograms are without equal. The references at the end of each chapter are numerous; Reid (1957) is mentioned in the text, but omitted from the bibliography. The failure of so many British publications to quote the titles of papers listed is infuriating, but apparently inevitable. The meaning of the legend to Figure 49, showing a bronchus deviated by a bullous area, receives a pleasing twist by the insertion of two commas: "Distortion, of course, due to bullous emphysema."

Bone Diseases in Medical Practice. By I. Snapper, M.D.; 1957. New York and London: Grune and Stratton. 10¼" × 7", pp. 288, with 48 plates. Price: $15.00.

THE study of the generalized disorders of bone is quite fascinating in the challenge that it offers to the inquiring mind, but it is true to say that many find it difficult to encompass. Advances in knowledge have come from many sources; X-ray diffraction techniques have clarified the minute crystalline structure of the bone salts, the use of radioactive isotopes has demonstrated the size and mobility of the store of electrolytes in the skeleton, and the newer knowledge of renal tubular function aided by chromatography has helped in the elucidation of vitamin *D* resistant rickets and related conditions. Dr. Snapper, with a lifelong interest in his subject and experience expanded in three continents, has succeeded admirably in presenting his material clearly and concisely. Though what he writes is firmly based on pathology and biochemistry, each disorder is systematically reviewed from the clinical, therapeutic and radiological viewpoints. The X-ray pictures are widely representative and are superbly reproduced by a new gravure process. There is an appropriate number of apt references with a nice blending of the classical with the very recent, though it is surprising to see 71 articles on hyperparathyroidism quoted without mention of J. C. Aub. The suggestion that *osteitis fibrosa disseminata* might be a form of lipoid granuloma, a variant of eosinophilic granuloma or Hand-Schüller-Christian's disease, was a novel one to us, and it would seem that the evidence in favour of such an hypothesis is far from complete. There are few other surprises, and the general approach throughout the book is a careful synthesis of contentious theories into a plan which best fits present-day knowledge. This plan may not be the same in the ensuing years, but it is a rapidly changing field.

The Medical Interview: A Study of Clinically Significant Interpersonal Reactions. By Ainslie Meares, M.B., B.S., B.Agr.Sc., D.P.M.; 1957. Springfield, Illinois, U.S.A. 8" × 5¼", pp. 123. Price: 25s. (British).

WITHIN a comparatively small space, Dr. Ainslie Meares has attempted the extremely difficult task of clarifying the dynamic interaction which takes place between doctor and patient in the medical interview. Although this interaction is of a subtle nature and contains much that is non-verbal, and, therefore, not readily susceptible to verbal analysis, the attempt appears to have been largely successful.

At the same time, it may be said that although the book is addressed in particular to medical students and general practitioners, the material contained therein may lead the reader to believe that it is those largely with psychiatric leanings who will be most interested in this work. This is not to say that any medical practitioner, whatever his orientation, would not benefit from a closer understanding of the dynamic principles governing the medical interview, but that it is doubtful, in the light of the present somewhat materialistic attitude inherent in the medical student's training, that such an understanding can be acquired by reading alone. A lot of spade work needs to be done initially by means of precept and example. In endeavouring to call the attention of the general practitioner, or for that matter, the medical student, to these important aspects, the author might, even at the expense of enlarging the book somewhat, have dwelt a little more on the patient with actual physical disease. Although it is stated in the preface that the primary concern is with the discussion which takes place when it is some problem, rather than a symptom, which brings the patient to consultation, the two cannot often be readily dissociated. Symptoms, whatever their basis, are often problems in themselves.

However, the book is to be commended, particularly for the clear way in which some very complex concepts are analysed and explained. One other minor criticism is that some of the numerous subheadings scattered throughout the text, though undoubtedly convenient, are irritatingly reminiscent of newspaper headlines.

Surgical Technique: And Principles of Operative Surgery. By A. V. Partipilo, M.D., F.A.C.S.; foreword by Alton Oschsner, M.D., F.A.C.S.; Sixth Edition; 1957. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 10" × 7", pp. 968, with 719 illustrations. Price: £8 15s.

THIS new edition of a well-known book should enhance its reputation. It is profusely illustrated, and the standard of the drawings and of their reproduction is high. The general editing has been done faithfully, and the publishers deserve credit for the quality of their work, even if the finished book is somewhat weighty. In this edition, thirty-eight new chapters have been added, including good contributions by colleagues on anæsthesiology, radioactive isotopes and radiotherapy, and cardio-vascular and thoracic surgery. Some 13 colleagues have contribtued to this volume.

The field covered is immense, and naturally the methods of choice quoted are those favoured by this group, mainly of Chicago. The references in the bibliographies are predominantly to the American literature. Although this volume is very up to date for a book of its nature, the author has been careful to observe the advice of William Mayo that "it is wise to be conservative and to compel new departure to bring its own proof". It is pleasing to see the operative techniques so lucidly described and profusely illustrated. Each section contains an excellent review of the anatomy, physiology and pathology of the region, and the indications for the various operations are clearly stated.

In reviewing a work of such proportion, a detailed and critical analysis would be out of place and unfair. A book with a predominantly local flavour might find it hard to achieve wide acceptance. However, although this work is too comprehensive for the average undergraduate, it can be recommended as a useful addition to the library of postgraduate students, lecturers and practising surgeons.

The Clinical Management of Varicose Veins. By David Woolfolk Barrow, M.D.; Second Edition; 1957. New York: Hoeber-Harper. 9¼" × 6¼", pp. 192, with 70 illustrations. Price: $6.00.

THIS is a comparatively small book on varicose veins and their complications, as far as the actual number of pages is concerned. However, all aspects of the subject are fully covered. As a result, there is no wasting of words, and it is a book to be studied rather than read through in leisure moments. There is an assumption that much of the subject is generally accepted and known, and so the aspects of history, anatomy and physiology are covered shortly, but the descriptions are accompanied by clear illustrations and tables. More emphasis and space are given to the practical problems to be encountered in treatment of the varicosities and their complications. Here again, discussions are concise, and attention is directed to tried and proved methods. This book is a second edition, and so all the latest ideas and advances are included. The author expresses his own views with conviction, but no dogmatism, and a full reference to literature is included on all points for those who wish to read other views. The operative treatment is described rather shortly, and with perhaps too little detail, and it seems unwise to state that the operation of sapheno-femoral ligation is not difficult. The procedure of stripping is favoured, and the need for dividing incompetent communicating veins is stressed.

Incidentally, it is interesting to read, in one of the references, that Homans recommended in 1917 that an ulcer should be excised, and that the large incompetent communicating vein beneath it should be divided. A good deal of space is devoted to the complications of varicose veins, and much valuable practical advice is given.

There are some points of detail that will not be generally accepted—for example, the advocacy of active treatment for varicose veins during pregnancy, the necessity for sapheno-

femoral ligation as an emergency measure in thrombophlebitis of the long saphenous vein, the assessment of the value of ligation of the superficial femoral vein in the old "thrombotic" leg, and the acceptance of Linton's extensive operation for division of multiple communicators in the leg. However, it is pleasing to read that the use of anticoagulants in thrombophlebitis of superficial veins is regarded as overtreatment and is not recommended, and also that sympathectomy for old deep vein thrombosis is wrong.

In all, this is an excellent book (not for the novice), wherein words are not wasted, ideas are clearly expressed and much practical advice is given. The emphasis is placed on the best methods known to date for the relief of the patient.

Applied Foot Roentgenology. By Felton O. Gamble, D.S.C., F.A.S.C.R.; 1957. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 10" × 6½", pp. 430, with 411 illustrations. Price: £8 5s.

THIS book is really one which is of little interest to the general radiologist. The book in itself is well produced and the illustrations are good; but as far as the subject matter is concerned, it really should be of greater interest either to an orthopædist or to one whose interest lies in those fine distinctions of joint angle or bone structure which fail to impress the general radiologist as of importance or of any clinical significance.

A large section of the book is devoted to the technique for production of radiographs at various angles, which would seem to be extraneous. The technical factors of chemistry and washing are, of course, in modern days quite unnecessary and not of great value, because dark-room technique and procedure are so stereotyped as to require no discussion.

The author propounds a pathology which is practically all of mechanical and positional origin. No consideration is given to conditions which may be of any other source—that is, bony dysplasias, familial disorders or even the simple inflammatory and septic lesions which may occur. Variation of bone structure is not of itself necessarily a pathological condition. Variations from the normal will fall into categories of malformations, anomalies and structural changes, many of which do not cause disability or pain or in any way prejudice the well-being of the individual.

It is possible that we take too conservative a view of this book, and that we may be accused of being incapable of recognizing a progressive work. To sum up, much effort and time has been spent in the production of a work which, from the point of view of the radiologist, offers very little of solid value.

An Introduction to Chest Surgery. By Geoffrey Flavell, F.R.C.S. (England), M.R.C.P. (London); 1957. London, New York and Toronto: Oxford University Press. 8½" × 5½", pp. 370, with 49 illustrations. Price: 49s. 9d.

MR. G. FLAVELL, in his introduction to this book, states that he has taken the unusual course of writing his book in current English, hoping one day to see a student read it in a train. He has been, singularly successful in producing a most interesting, concise and readable little book, and one which accurately fulfils its function as an introduction to chest surgery. The wise student would do well to take this book in the train, rather than waste time on the panorama placed before him in the standard text-books.

Throughout the book, brief, well-chosen case histories are insinuated into the text, and achieve their object of illustrating the basic pathology in a most interesting fashion. Similar use is made of many maxims of chest disease; for example: "Any cavitated lesion in the chest X ray of a man over 40, demands a provisional diagnosis of bronchial carcinoma."

It is difficult to find anything of which to be critical. However, the section on chest trauma might well have been expanded and more clearly explained. Any country doctor in Australia may have to face the emergency of severe chest injury. In fact, it is about the only thoracic emergency he has to face. There are, likewise, some statements with which it is difficult to agree—for example: "Post-operative bronchiolar leaks do not give rise to infection", "Iodine and thoracoscopy are of little value in the management of spontaneous pneumothorax".

This book can be read with advantage by all. It is one of those books rare in medicine, which can be passively assimilated. The author has done all the work. It is most suitable for students. It could prove a real friend to anyone preparing for a higher examination in medicine or surgery.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Hospital and Community: A History of the Royal Melbourne Hospital", by K. S. Inglis, 1958. Melbourne: Melbourne University Press. 8½" × 5", pp. 236, with illustrations. Price: 30s.

The story of one of Australia's leading hospitals.

"Outline of Orthopædics", by John Crawford Adams, M.D., F.R.C.S.; Second Edition; 1958. Edinburgh and London: E. and S. Livingstone Limited. 8½" × 5", pp. 436, with 301 illustrations. Price: 35s. (English).

Intended primarily for students.

"The UFAW Handbook on the Care and Management of Laboratory Animals"; Joint Editors: Alastair N. Worden, M.A., B.Sc., M.R.C.V.S., F.R.I.C., and W. Lane-Petter, M.A., M.B., B.Chir., with a foreword by Sir Harold Himsworth, K.C.B., M.D., F.R.C.P., F.R.S.; Second Edition (greatly enlarged). 9½" × 7", pp. 971, with many illustrations. Price: 70s. (English).

The first edition appeared in 1947. The present edition has been fully revised and enlarged.

"Textbook of Virology for Students and Practitioners of Medicine", by A. J. Rhodes, M.D., F.R.C.P., F.R.C.P., and C. E. van Rooyen, M.D., D.Sc., M.R.C.P., F.R.C.P.; Third Edition; 1958. Baltimore: The Williams and Wilkins Company; Sydney: Angus and Robertson Limited. 9" × 5½", pp. 660, with 75 illustrations and 22 tables. Price: £5 10s.

The authors aim "to present an account of the essential features of the virus and rickettsial diseases in man, in a form suitable for undergraduate and post-graduate students of medicine, bacteriology, virology, and public health".

"The Pharmacologic Principles of Medical Practice: A Textbook on Pharmacology and Therapeutics for Medical Students, Physicians, and the Members of the Professions Allied to Medicine", by John C. Krantz, Jr., and C. Jelleff Carr; Fourth Edition; 1958. Baltimore: The Williams and Wilkins Company; Sydney: Angus and Robertson Limited. 9" × 5½", pp. 1316, with many illustrations. Price: £7 14s.

A standard work extensively revised.

"Textbook of Gynecology", by John I. Brewer, B.S., M.D., Ph.D.; Second Edition; 1958. Baltimore: The Williams and Wilkins Company; Sydney: Angus and Robertson Limited. 9" × 6", pp. 758, with 204 illustrations. Price: £8 5s.

A book, primarily for students, fully revised in its present edition.

"Preventive Medicine for the Doctor in His Community: An Epidemiologic Approach", by Hugh Rodman Leavell, M.D., Dr.P.H., E. Gurney Clark, M.D., Dr.P.H., and nineteen contributors; Second Edition; 1958. New York, Toronto, London: McGraw-Hill Book Company Inc. 9" × 5½". Price: $10.00.

This is designed primarily for those in or expecting to enter private practice.

"The Nursing of Mental Defectives", by Charles H. Hallas, S.R.N., R.M.N., R.N.M.D., S.T.D., with a foreword by Ronald C. MacGillivray, M.B., Ch.B., F.R.F.P.S., D.P.M., and an introduction by W. L. Walker, M.B., Ch.B., D.P.H., D.P.M.; 1958. Bristol: John Wright and Sons Limited. 8½" × 5", pp. 196, with 9 plates. Price: 21s. (English).

A text-book prepared primarily for nurses.

"IV Congreso Venezolano de Circurgia (Relatos Oficiales y Correlatos)", Secretaria de la Sociedad Venezolana de Cirugia; 1957. Caracas: Prensa Medica Venezolana. Price not stated.

This volume contains the papers presented at the fourth Venezuelan Congress of Surgery, held in March, 1957, as well as the rules and regulations and list of members of the Venezuelan Society of Surgery. It is written entirely in Spanish.

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CANCER OF THE UTERUS.

THE whole problem of the early detection of cancer has in recent years been receiving increasing attention, especially in the United States of America, where special cancer detection clinics are becoming an accepted part of the medical landscape. Elsewhere in this issue we publish an article by A. McQueen Thomson on the question of routine medical examinations as a means of cancer detection. Enthusiasts for the idea would have the entire adult population submit to a complete medical examination once a year. On the other hand many competent medical authorities consider it doubtful whether the idea of encouraging routine medical examinations on a large scale is either practicable or desirable.

However, though the value and desirability of regular complete medical "check-ups" are still the subject of controversy, there is one field in which doubts are rapidly being dispelled. It is about fifteen years since Papanicolaou firmly established the technique by which cancer of the uterus, especially cancer of the cervix, could be detected by the recognition of cancer cells in smears taken from the vagina. The medical world was at first slow to admit the importance of his discovery, and slower still to exploit it, but today it is being widely realized that Papanicolaou's technique has opened up exciting new prospects both in the field of cancer research and in the field of preventive medicine. Many reports are now appearing of the results of the examination of large numbers of individuals by this technique. These surveys are of two kinds. Some are mass surveys, such as that conducted by H. E. Nieburgs and his colleagues[1] in Floyd County, Georgia. These workers undertook the ambitious project of screening the entire female population over 19 years of age in a given area. By enlisting all the means of publicity available, they obtained the willing cooperation of the people, and their report gives the results of the examination of 17,761 women, which was about 90% of the adult female population of the area concerned.

By far the most extensive survey of this kind yet reported is that by C. C. Erickson and his colleagues. Their preliminary report[2] records the results of a first examination of smears from 108,000 women in Shelby County, Tennessee, and the results of second tests for 33,000 of these. These figures mean that smears were examined from over half the adult female population of the county. In the Floyd County survey most smears were prepared from endocervical swabs taken under direct vision, as it was considered that these would be more reliable than smears from the vaginal pool. However, because of the very large numbers involved, Erickson *et alii* prepared their smears from material obtained by vaginal aspiration, which could be done by trained technicians, and their results suggest that this was without adverse effect on the efficiency of their technique. Other surveys are of the kind recently reported by Professor H. C. McLaren and his colleagues[1] in Birmingham. In this survey smears were taken from all patients attending a gynæcological clinic over a five-year period; the series is therefore a selected one, in which the incidence of uterine morbidity would be expected to be high. Invasive carcinoma of the cervix will rarely be missed on clinical examination by experienced examiners; McLaren and his colleagues found three such cases, missed on clinical examination but picked up by cytological examination, out of 4250 patients examined, and these were patients attending for gynæcological disorders. It is clear that in the population as a whole, the number of cases of invasive carcinoma of the cervix which would be found by cytological examination after being missed on clinical examination would be small. On the other hand, large-scale surveys will always pick up a few patients whose cancer has not been detected because they have not consulted a doctor, either through ignorance or because their symptoms appear trivial. However, the real importance of the vaginal smear technique is in the detection of carcinoma *in situ* (intraepithelial carcinoma), a lesion which is often undetectable on clinical examination and is nearly always symptomless, and which is now recognized as a definite pre-cancerous condition. The three surveys mentioned all agree in finding that the frequency of intraepithelial carcinoma is slightly less than four cases in every thousand women examined. It is well established that some cases of intraepithelial carcinoma will disappear spontaneously, but that others will eventually progress to invasive cancer. McLaren regards hysterectomy for carcinoma *in situ* as justifiable if the patient cannot be kept under adequate supervision. It is also highly probable that a large proportion of invasive cancers, if not all, begin as intraepithelial carcinomata, and that these may remain as pre-invasive lesions for many years. We have therefore a means of detecting cervical cancer at a stage when it is eminently curable. This is a most important fact. Cancer of the cervix is one of the commonest and one of the most dreaded of the cancers to which womankind is prone. In New South Wales, on an average, three women die from cancer of the cervix every week. This mortality could be largely eliminated if it were possible to examine a vaginal smear from every adult woman once a year. That is the problem.

Up to the present the greatest obstacle in the way of undertaking the examination of really large numbers of vaginal smears has been the fact that the technique is exacting and time-consuming. McLaren states that it takes six months to train an assistant in the technique, and that the examination of each slide takes five to seven minutes. However, fatigue soon sets in, and it is not possible for a human operator to maintain this rate. One authority estimated that in mass surveys it takes 50 hours' work to find one positive slide. A recent editorial article in the *British Medical Journal*[2] pointed out that to apply the technique on a large scale would require the services

[1] *J.A.M.A.*, 1957, 164: 1548 (August 3).
[2] *J.A.M.A.*, 1956, 162: 167 (September 15).

[1] *Lancet*, 1958, 1: 398 (February 22).
[2] *Brit. M. J.*, 1958, 1: 696 (March 22).

of doctors and nurses to conduct examinations and collect specimens, and of trained technicians, experienced cytologists and pathologists to make and confirm the diagnosis, and concluded with the words: "An adequate number of such trained staff is not available in Great Britain." The development of an electronic machine capable of scanning suitably prepared slides is therefore an advance of the very greatest importance. Though this machine, which is called a cyto-analyser, is still in the developmental stage, we understand that two such machines are in operation in America, and that the first reports of their performance are very encouraging. The great virtue of such machines is not that they work so very much faster than a skilled technician, but that they are tireless; this enables one machine to do the work of at least ten qualified technicians, work of an exacting and monotonous nature. Of course, the machine does not make a diagnosis. It selects those slides which appear doubtful (about 10% of those submitted), and these are then examined by man. These machines are, of course, expensive, their cost is of the order of $50,000, but they make possible, for the first time, the examination of smears from really large numbers of patients. It is for this reason that Professor Bruce Mayes, of the University of Sydney, has arranged for Dr. Bevan Reid to go to America to study the cyto-analyser in operation. If it comes up to expectations, it is hoped that one will be secured for operation in Sydney, and that it will make possible a major step forward in the fight against cancer.

Two points should be emphasized. The first is that a suitable smear can be prepared in any doctor's surgery. Attendance at special centres is not necessary; the slides can simply be posted in to the laboratory, where they are to be examined. There is no reason why the taking of a smear for cytological examination should not become a routine part of every gynæcological examination, whether this is done in a hospital clinic or in a general practitioner's surgery. The second point is that a positive smear is simply an indication for further investigation. The next step is usually a ring biopsy of the cervix. In cases of intra-epithelial carcinoma this procedure in itself is sometimes curative. Only when there is clear histological or clinical evidence of the presence of invasive carcinoma is major surgical or radiotherapeutic interference indicated. The cost of the machine in money is by no means insignificant, but when set beside the objective to be attained, it would be a small price to pay for the contribution to the prevention of human suffering which it appears to promise.

Current Comment.

BLOOD PRESSURE IN PERSONS OVER SIXTY-FIVE.

IN most white populations the number of persons 65 years of age and more is rapidly increasing. Thus in the United States in 1955 there were 14,000,000 persons 65 years of age and over, and there are expected to be at least 20,000,000 by 1975. There is little information concerning the range of the blood pressure in older people. Surveys which have been done have been inadequate in several respects. We do not know whether the blood pressure continues to rise with advancing years as it does from birth to 65 years, or whether an increase in the blood pressure after the age of 65 years results in a rise in mortality rate; and many other questions can be asked. In an attempt to answer some of them A. M. Master, R. P. Lasser and H. L. Jaffe[1] have, with the assistance of approximately 5000 physicians, collected data on 15,000 subjects 65 years of age and older. From these they selected 5757 (2998 men, 2759 women) who were apparently free from cardio-vascular diseases and were able to look after themselves. For the purpose of this study these were considered to be apparently healthy. The study shows that the systolic pressure does not continue to rise with age after the seventy-fifth year, or the diastolic after the seventieth year. Women over the age of 65 years have a higher systolic pressure than men, but it falls steadily after the age of 74 years. It may be that the factors which result in a progressive increase in the pressure in earlier years exert a diminishing effect later in life. It is possible too that many people do not develop evidence of cardiac or cerebro-vascular disease until, say, past the age of 70 years. At this age these diseases finally become apparent with greatly accelerated frequency, or death occurs. The net effect is to maintain a constant mean pressure in men and a declining mean pressure in women after the sixty-fifth year. The diastolic blood pressure is practically constant after the age of 65 years in both sexes. The mean blood pressure for all subjects, 65 to 106 years of age, was found to be 145/82 millimetres of mercury in men and 156/84 millimetres in women. The middle 80% range was 115-175/70-95 in males and in females 120-192/65-102; blood pressures within these limits were in general not associated with evidence of hypertensive heart disease.

These observations are of considerable interest, but as with any other observations on blood pressure it is important not to be hypnotized by sphygmomanometer readings. While the figures recorded by Masten and his colleagues may be useful in considering blood pressure in elderly persons, the final evaluation depends on the entire clinical picture.

A JOURNAL OF ERGONOMICS.

ALTHOUGH the steady increase in the number of medical journals is often deplored, developments in medicine and allied fields make the birth of some new journals necessary and desirable. This is so with the new journal *Ergonomics*, which deals with human factors in work, machine control and equipment design, and is the official publication of the Ergonomics Research Society. The general editor is A. T. Welford, of the University of Cambridge Psychological Laboratory. In the first number of the first volume, which is dated November, 1957, an editorial article points out that the term ergonomics is derived from two Greek words, and means literally "the customs, habits or laws of work". It was coined to denote an approach to the problems of human work and control operations, which came into prominence during the second World War in relation to equipment for the fighting services, and which since the war has been widely recognized as having important implications for industry. The development of radar and of high-speed aircraft, the elaboration of operation-plotting rooms and of controls for ships, and the designs of clothing for extremes of temperature all emphasize that technical developments had reached the stage at which the capacities of the user rather than the potentialities of his equipment were setting limits to the performance of men and machines working together. For progress to be made, it was therefore necessary that these human limits should be studied and given due consideration.

Many disciplines have been involved in this, and they have not always found it easy to make themselves understood to one another or to those who might be classed as "users". Moreover, the material has been scattered widely through many journals and other published reports. The present journal is designed to further three types of communication: between disciplines, between research

[1] *Ann. Int. Med.*, 1958, 48: 284 (February).

and industry and between different countries. It is stated that it will be an interdisciplinary scientific periodical for the exchange of research information; at the same time it will provide those whose main interest is in practical applications with some articles of direct use and a larger number which give insight into likely future developments. The international board of editors will welcome contributions from any country in English, French, or German, and there will be summaries of the main papers in all three languages. It is hoped that the journal will thus appeal to those with a research interest in the human biological disciplines, and also to engineering and machine tool designers, industrial medical officers and technical and managerial staff in industry. Although the journal will not deal with routine work study or personnel selection, material will be included and techniques described which are likely to provide additional "tools" for departments dealing with those procedures. The journal will be the official organ of the Ergonomics Research Society and will publish the proceedings of the Society and other matters of interest to the Society's members. It is emphasized, however, that contributions which reach the required standard will be accepted irrespective of whether or not their authors are members of the Society.

Some idea of the scope of the journal will be seen from the contents of the first number, which deal with human limitations and vehicle design, the effects of noises of high or low frequency on behaviour, changing physical demands of foundry workers in the production of medium-weight castings, a comparison between the results of three different methods of operator training (this relates particularly to the mending of worsted cloth), the effects of increasing skill on cycle time and its consequences for time standards, intermittent light stimulation and flicker sensation, consideration of the user in telephone research, and factors in fatigue and stress in the operation of high speed diesel passenger railway cars with only one driver present.

Ergonomics is printed and published by Taylor and Francis Ltd., Red Lion Court, Fleet Street, London, E.C.4. The subscription price per volume is £4 15s. sterling. The price per part is £1 5s. We are not able to find in the first number any indication of how often the journal is to be published.

RESIDUAL INSECTICIDE SPRAYING.[1]

MALARIA SURVEYS of a reconnaissance type give cross-sectional information at one point in time, but longitudinal studies over a period of years give a much more complete picture. There have been too few detailed reports from New Guinea on malaria studied over an extended period. In a thesis prepared for his doctorate Dirk Metselaar[1] has produced a contribution which ranks with those of Heydon from Rabaul and de Rook from Tanah-Merah as an account of malaria observations made over a number of years. The experiments using trap-huts which are reported by Metselaar were the first to be performed in New Guinea; and the pilot project using residual D.D.T. and, later, dieldrin was the first extensive controlled attempt to assess the effect of this method for the control of malaria transmitted by the punctulatus group of anophelines. Metselaar was not able to interrupt transmission completely by one round of residual spraying, but there were considerable improvements in the malaria status and in other aspects two years after the spraying was done. Failure to obtain interruption of transmission is attributed either to the people occasionally spending the night away from the sprayed area, or to infection occurring in the village but outside the houses.

Dissection of 3896 anophelines which were members of the punctulatus group—*Anopheles punctulatus*, *A. farauti* and *A. koliensis*—gave an average sporozoite rate of 1·1%, and from this it was deduced that the average life of members of this group of anophelines was relatively short in nature. *A. bancroftii* and *A. kawari* are recorded for the first time as infected with sporozoites in nature; but it should be recalled that the former species was found infected with oöcysts over 20 years before at Tanah-Merah by de Rook.

The work reported here indicates that dieldrin as a wettable powder may well be the insecticide of choice for the malaria campaign in New Guinea, and also that some type of chemotherapy may have to be used in parts as an addition to residual insecticide if the aim is malaria eradication. A pilot project using dieldrin is now in progress in the Territory of Papua and New Guinea.

[1] "A Pilot Project of Residual Insecticide Spraying in Netherlands New Guinea, Contribution to the Knowledge of Holo-Endemic Malaria", by Dirk Metselaar; 1957. Utrecht: Kemink en Zoon. 10¼" × 6¼", pp. 144, with 16 illustrations. Price not stated.

BIOLOGICAL ASPECTS OF CANCER.

THE choice of Julian Huxley to give the first Alfred P. Sloan oration on cancer was a fortunate one, though the lecturer had not studied human pathology or indeed any other purely medical subject. It was also a happy circumstance that the distinguished biologist at the time was not encumbered with teaching, administration or the need to produce a stream of research papers, and so was able to devote his time and unabated energy to the study of tumour formation from a new angle. The lecture was subsequently enlarged and appeared as two articles in *Biological Reviews*; later this treatment was expanded into a book[1] which, like the "Anatomy of Vertebrates" by his renowned grandfather, is densely packed with factual matter but always expounded with admirable clarity.

The central theme of the book is that cancer is not merely a medical problem; it is a biological phenomenon and invades many aspects of life and human ecology. First comes a survey of the animal kingdom, and the medical reader will be surprised at the divergence of tumour incidence and type amongst species and even breeds. Then follow the invertebrates, and then the vegetable kingdom. Concerning the last-mentioned it may be stated that investigators of human cancer have expressed surprise that more work has not been carried out on galls, in which there is active cell proliferation, useless to the host, arising from a something, possibly a virus, elaborated by the larva or introduced by the ovipositor. Such critics will here ascertain that far more research has been directed to this problem than they ever imagined.

On the genetic side Julian Huxley shows the erudition and judgement we expect from him. Human cancer investigators have dismissed hereditary factors as non-existent, but it is here convincingly demonstrated that cancer proneness is indeed genetically determined. In the human being, in whom pure strains are not available for examination, the separate and individual susceptibilities have become mixed, so that no one genetic basis can be singled out. Yet in the human species there is a definite correlation between blood groups and tumour incidence; thus group A increases cancer of the pyloric antrum, whilst group O increases cancer of the body, of the stomach. A similar connexion can be observed with gastric ulcer. Huxley destroys the hopes of those who imagine that the cancer problem will be solved by the study of carcinogens. He writes: "Any agency capable of pushing cell-metabolism in a certain general direction—that of upsetting the normal growth-balance so as to favour non-limited replication—is capable of initiating a tumour." The causal relationship of cigarette smoking to the high incidence of lung cancer is accepted.

Huxley's book will arouse the wonder and admiration of the reader by the vastness of its survey of animal and plant pathology. Nothing like it has appeared to date, and one may express the opinion that it may take its place as one of the greatest contributions to cancer research in this century so far.

[1] "Biological Aspects of Cancer", by Julian Huxley, F.R.S.; 1957. London: George Allen and Unwin, Limited. 8½" × 5", pp. 156. Price: 16s. (English).

Abstracts from Medical Literature.

PHYSIOLOGY.

Hepatic Function with Eck Fistula or Portacaval Transposition.

W. SILEN *et alii* (*Arch. Surg.*, June, 1957) report on studies of hepatic function in dogs with Eck fistulæ and in dogs with portacaval transposition. They state that there is considerable evidence that impairment of hepatic function occurs when the hepatic blood flow is reduced. They operated on a total of 12 adult mongrel dogs. One group of dogs was prepared with Eck fistulæ and another group with transposition of the portal vein and *vena cava*. They tested liver function by means of sulphobromophthalein clearance, tolerance to orally administered ammonium lactate and thymol turbidity, and serum protein determinations were made both preoperatively and post-operatively. They stated that the general condition of the dogs with Eck fistulæ was poor. They lost weight and there was a decrease in the total circulating plasma albumin. A gradual decline in sulphobromophthalein clearance also occurred. The fasting levels of ammonium nitrogen in the blood were found to be increased when measured three months after operation. In these dogs tolerance to orally administered ammonium lactate was considerably less than that of normal animals or of those with portacaval transpositions. The livers of the animals with Eck fistulæ were atrophic and showed evidence of fatty infiltration, decrease in glycogen content and loss of cells in the central zones. Both laboratory and histological findings in the dogs with transposition or the portal vein and *vena cava* were very similar to those of normal animals, there being no significant loss of weight and the total circulating albumin increased in every animal of the group except one. The clearance of sulphobromophthalein increased after the portacaval transposition operation. The livers and kidneys of these dogs were of normal weight and there were no gross or microscopic abnormalities. The fat and glycogen contents of their livers were normal.

Pulmonary Ventilation in Pontile and Medullary Cats.

S. H. NGAI (*Am. J. Physiol.*, August, 1957) reports that oxygen consumption, arterial blood pH, carbon dioxide tension and oxygen saturation were determined in pontile decerebrate cats with normal respiration and apneustic respiration, and in medullary cats with rhythmic respiration. Respiratory acidosis is observed regularly during apneustic respiration. In medullary animals, respiratory acidosis also occurs if the respiration is slow or shallow. The oxygen consumption is not changed and a reasonable arterial blood oxygen saturation is maintained. This is probably attributable to the fact that these animals are breathing oxygen-rich mixtures. The inhalation of 10% carbon dioxide increases the amplitude of the respiratory spasm and accelerates the apneustic cycle. This response persists after carotid denervation. Stimulation of the carotid chemoceptors with intracarotid injection of sodium cyanide also accelerates the apneustic cycle. It is concluded that although the afferent impulses from the carotid receptors can modify the activity of the apneustic centre, they are not to be considered essential for the production of the apneusis. The underlying mechanism for the cycling in apneustic respiration is not clear from the present study. It appears that this cycling is probably not related to the low oxygen tension but rather to the increased carbon dioxide tension in the arterial blood.

Protective Effect of a Sucrose Diet in Mercuric Chloride Poisoning.

A. SURTSHIN (*Am. J. Physiol.*, August, 1957) reports that rats fed on sucrose and vitamins for three weeks or more usually survive intravenous injection of three milligrammes per kilogram body weight of mercuric chloride, a dose lethal for rats on a normal diet. Survivors returned to a normal diet grow rapidly and appear grossly normal. Survival occurs in the presence of a diminished rate of excretion of radiomercury and a renal concentration and content of radiomercury higher in sucrose-fed protected rats than in unprotected rats on a normal diet. Sucrose feeding itself causes slower excretion of mercury; evidence indicates that the renal binding of mercury in protected rats is greater than in the unprotected. Some sucrose-fed rats surviving an initial dose of mercuric chloride survive additional doses after return to a normal diet. The excretion and renal content of mercury is not altered by ammonium chloride acidosis in chow-fed rats given mercuric chloride.

Expired Air Resuscitation.

D. G. GREENE *et alii* (*J. Appl. Physiol.*, September, 1957) report that the value of expired air resuscitation has been studied in 16 anæsthetized curarized human subjects. A mask resuscitator suitable for use in contaminated atmospheres was employed. The parameters measured include the alveolar carbon dioxide and oxygen concentrations of the operator and of the subject, the air flow and tidal volume, the subject's oxygenation by ear oximeter and the subject's arterial oxygen saturation, carbon dioxide tension and pH. All parameters independently indicated the complete adequacy of the method under widely varying conditions of rate and volume of inflations and with multiple operators. Alveolar oxygen concentrations in the subject during prolonged performance of the method were sustained above the normal range.

Uptake of Sulphur, Calcium and Yttrium in Healing Bone Fractures.

N. S. MACDONALD, P. C. LORICK AND L. I. PETRIELLO (*Am. J. Physiol.*, October, 1957) report that a mixture of carrier-free radioisotopes, Ca^{45}, S^{35} and Y^{91}, was injected into rats bearing left tibial fractures, in stages of repair varying from three to 18 days. Twenty-four hours after injection, both tibiæ were removed and analysed for content of each radioisotope. At all intervals up to 18 days after the fracture the injured bone contained more of all three isotopes than the intact, contralateral mate. A maximum in twenty-four-hour retention of radiosulphate in tissue at the fracture site was reached by the seventh to tenth day, after which retentions of a dose of S^{35} declined rapidly. Retentions of a dose of Ca^{45} in the fractured bone also rose rapidly during the first three to 10 days of healing. Thereafter, twenty-four-hour retention values continued to rise, but at a reduced pace. The avidity of healing bone for yttrium increased sharply during the same three to 10 days' interval, during which radiosulphate deposition became most effective. After this time twenty-four-hour retention values for Y^{91} increased only slightly, if at all. The data suggest that formation of the sulphated mucopolysaccharides of osteoid matrix and fibrocartilaginous callus began by at least the third day, if not earlier. The healing fracture made its greatest demands for plasma sulphate during the seventh to tenth day after the fracture. New calcium was laid down at the fracture site just as early as new sulphate, but the demands for plasma calcium continued throughout the 18 days of observation, as might be expected for a mineralizing callus. Yttrium fixation in the healing bone appeared to be more closely related to events leading to organic matrix formation than to mineralization of the new tissue.

Acclimatization in a Mine.

C. H. WYNDHAM AND G. E. JACOBS (*J. Appl. Physiol.*, September, 1957) report that 73 men were acclimatized to work in an area of a mine with a wet bulb temperature of 91° F. They then spent six days on the surface in relatively cool conditions. On return to work in the hot area, mouth temperature was significantly increased, by a mean amount of 0·7° F. One further day of work in heat decreased mouth temperature significantly; the increase following cool exposure fell from a mean of 0·7° F. to 0·2° F.

Distensibility of Blood Vessels of the Human Calf.

D. R. COLES *et alii* (*J. Appl. Physiol.*, May, 1957) report that increases in volume of the human calf were measured on exposure to those subatmospheric pressures which bring about increases in the transmural pressure of the blood vessels of the same order as those normally encountered due to postural change. It was concluded that these volume changes were due to blood. It was found that the volume of extra blood which could be accommodated in the calf at any level of subatmospheric pressure was fairly constant for each subject and varied little between the subjects tested. The pressure/volume curve was not altered by local heating of the calf, or by general heating of the subject to release sympathetic vasomotor tone. The cure was depressed by severe local cooling. In some experiments exercise of the calf muscles was performed for the second minute of a three-minute period of suction. This exercise made no difference to the amount of extra blood which could be held in the calf during the third minute. During the exercise the volume of extra blood was reduced,

owing to the action of the muscle pump. This reduction in volume was independent of the size of the increase in transmural pressure, once a certain level of exercise had been attained. It was concluded that factors which caused an increase in peripheral blood flow have no effect on the over-all capacity of a limb. Local cooling causes reduction in this capacity.

Post-Operative Transient Aldosteronism.

J. LLAURADO AND M. WOODRUFF (*Surgery*, August, 1957) state that the changes in sodium and potassium metabolism commonly known to occur in patients submitted to surgical operations are associated with an increase in the daily urinary excretion of aldosterone, and they suggest that this phenomenon be called post-operative transient aldosteronism. They suggest that aldosterone is a principal factor responsible for the electrolyte disturbances which occur in the first few days after operation.

BIOCHEMISTRY.

Adaptation.

E. C. LIN AND W. E. KNOX (*Biochim. et biophys. acta*, October, 1957) have shown that an adaptive increase of the tyrosine - α - keto - glutarate transaminase occurred in the livers of rats following injections of tyrosine or of hydrocortisone. The increases were as great as ten-fold and occurred in five hours. Analysis showed that hydrocortisone itself was a sufficient inducing stimulus. Tyrosine was an effective inducing stimulus only if the adrenal glands or hydrocortisone also were present.

Cholesterol.

M. D. MORRIS *et alii* (*J. Biol. Chem.*, March, 1957) have reported experiments in which, for varying periods up to six weeks, rats were fed a diet containing either 0·05% or 2% cholesterol. The dietary cholesterol was labelled by admixture with cholesterol-4-C^{14}. At the end of the feeding periods the specific activities of serum cholesterol occurred in two weeks or earlier, in the rats fed the 0·05% cholesterol diet, but four weeks were required for this to occur in the rats fed the 2% cholesterol diet. It was estimated, from the ratio of the specific activity of the serum cholesterol to that of the dietary cholesterol, that in the rats fed the 0·05% cholesterol diet, synthesis contributed from 67% to 80% to the composition of serum cholesterol. In those fed the 2% cholesterol diet, from 10% to 26% of serum cholesterol was derived from synthesis.

Steroids.

P. TALALAY AND H. G. WILLIAMS-ASHMAN (*Proc. Nat. Acad. Sc.*, January, 1958) have reported that soluble enzyme preparations of human placenta promote the transfer of hydrogen from TPNH to DPN in the presence of minute amounts of certain steroid hormones. The same enzyme preparations catalyse the oxidation of these steroids by both forms of pyridine nucleotides. Evidence is presented for the identity of a placental hydroxysteroid dehydrogenase with the transhydrogenase activity. It is proposed that the metabolic function of hydroxysteroid dehydrogenases with dual pyridine nucleotide specificity is to act as pyridine nucleotide transhydrogenases. Properties of some hydroxysteroid dehydrogenases which favour transhydrogenation are: (1) their high affinity for particular steroids; (2) their ability to react with both DPN and TPN; and (3) the suitable equilibria between steroid alcohols and ketones which obtain at physiological hydrogen ion concentrations.

Insulin.

S. SCHILLER AND A. DORFMAN (*J. Biol. Chem.*, September, 1957) have studied the turnover of the mucopolysaccharides hyaluronic acid (HA) and chondroitin-sulphuric acid (CSA) in the skin of the diabetic, fasted, insulin-treated non-diabetic and insulin-treated diabetic rats, following the administration of the precursors, acetate-1-C^{14} or glucose-U-C^{14} and $Na_2S^{35}O_4$. The uptake of C^{14} by HA and CSA and of S^{35} by CSA isolated from the skin of diabetic animals is approximately one-third that found in the normal animals. Insulin treatment restored the values towards normal. It is suggested that insulin participates in the metabolism of acid mucopolysaccharides.

Insulinase.

I. MIRSKY AND G. PERISUTTI (*J. Biol. Chem.*, September, 1957) have shown that extracts of rat liver which catalyse the degradation of insulin, catalyse also the degradation of casein, ribonuclease, corticotropin, growth hormone and glucagon under identical conditions. The relative specificity of the system responsible for the destruction of insulin (insulinase) is indicated by the demonstration that, whereas the presence of citrate ions increases, and aging and dialysis decrease the activity of liver extracts on the degradation of insulin, such measures do not influence the degradation of the other proteins.

Essential Amino Acids.

S. J. TUTTLE *et alii* (*Metabolism*, November, 1957) have studied the amino acid requirements in men over 50 years of age. Five healthy males ranging in age from 52 to 68 years were placed on control diets the caloric intake of which was varied according to the individual requirements of each subject, but whose protein content and sources were kept constant at 43·7 grammes (7·0 grammes nitrogen). Following the control period (usually 12 days) they were given essential L-amino acids in the proportion found in egg protein, and in quantities equal to or exceeding the level at which all younger subjects maintained nitrogen equilibrium. Glycine was added to bring the daily nitrogen intake to 7·0 grammes. Without exception all of the subjects went into negative nitrogen balance. Similar results were observed in three of the patients who received egg protein in an amount which duplicated the essential L-amino acid content of the synthetic mixture. The occurrence of a negative nitrogen balance in these older subjects when receiving quantities of amino acids both in synthetic form and as contained in egg protein, and substantially in excess of the amounts needed by most young adults to maintain nitrogen equilibrium, suggests that the quantitative requirements for one or more of the essential amino acids are increased in older men.

Metabolic Adaptation.

R. A. FREEDLAND AND A. E. HARPER (*J. Biol. Chem.*, October, 1957) have shown that rats fed diets in which protein, fat, galactose or fructose was substituted for a direct glucose source showed a marked increase in liver glucose-6-phosphatase activity calculated per gramme of liver per unit of body weight or per gramme of liver protein. Pair feeding decreased the differences between the control and experimental groups; however, the differences remained highly significant. Fasting for 24 hours before the start of the experiment did not affect the results. The feeding of a protein-free diet for four days had no significant effect on the liver glucose-6-phosphatase activity of rats that consumed the diet readily.

Fatty Acids.

E. LEVIN *et alii* (*J. Biol. Chem.*, September, 1957) have compared the liver mitochondria from fat-deficient and normal rats with respect to their ability to oxidize Krebs cycle intermediates. The fat-deficient mitochondria oxidized the substrates at faster rates than did the normal mitochondria. However, both oxidized pyruvate at approximately the same rate. Liver mitochondria from normal rats could be made to exhibit the qualities of those from fat-deficient animals on the basis of succinate-oxidizing capacity and oxidative phosphorylation by altering the osmolarity of the suspending medium. Conditions that accomplished this, however, altered the morphology of the control mitochondria, rendering them similar in appearance to the fat-deficient mitochondria. It appeared that fat-deficient mitochondria differed physically from normal mitochondria; during the process of their isolation they are relatively easily changed in form and perhaps in their biochemical properties as well.

Potassium Binding.

J. L. GAMBLE (*J. Biol. Chem.*, October, 1957) has observed relationships between potassium binding and oxidative phosphorylation in intact mitochondria and in mitochondrial fragments. In the case of the intact mitochondria, evidence that the two processes are linked derives primarily from consideration of a common dependence of these functions upon relative intactness of the mitochondrial structure. Experiments have been carried out which employ a preparation of smaller particle size derived from mitochondria. These mitochondrial fragments, which catalyse phosphorylation, also retain the capacity to bind potassium. Respiration via the cytochrome system has been found to preserve bound potassium and to increase the rate of its exchange with radiopotassium of the medium. These effects did not appear to be dependent upon the presence of ATP or its active synthesis, but were abolished by 2,4-dinitrophenol.

Special Article.

QUARTERLY REVIEW OF FRENCH MEDICAL PUBLICATIONS.

THE following review of current French medical literature has been made available through the French Embassy in Australia. It was prepared by Dr. Guy Godlewski, former Chief of Clinical Instruction of the Faculty of Medicine of Paris.

The 23 articles reviewed in this Press review have been selected from among several hundred. All contain important statistics, and many of them represent hospital experiences covering a number of years.

Several of them merit particular attention on the basis of the fullness of the published results, and among these are the work of Mozziconacci on the treatment of acute articular rheumatism by corticotherapy; that of Bolgert on the treatment of syphilis by associating mercuric cyanide and penicillin; that of Paul André on the relation between tonsillectomy and infantile paralysis; and that of Pierre Uhry on the "hypoglycæmiant" sulphonamides in the treatment of diabetes.

Excellent clinical and therapeutic investigations have been made by Professor Levrat on infectious lithiasis; by Professor Veran on the future of pulmonary tuberculosis patients treated with antibiotics; by Kunlin on the obstructions of the bifurcation of the aorta; and by Professor De Seze on acroparæsthesia and sciatic paralysis.

All these investigations are a credit to French medicine. For greater clarity, they have been listed here by special fields.

General Therapy.

P. Mozziconacci and M. K. Caramanian[1] report on the results of hormone treatment of acute rheumatic fever in 387 cases (including 207 first attacks), recorded from six months to six years afterward. The patients were treated with hormone in amounts of 100 to 300 milligrammes. The amounts were increased, when insufficient, and treatment was prolonged until the rate of sedimentation became less than 20 millimetres per hour. The authors insist on adapting the dosage to each individual case, and further recommend following up the hormone treatment by giving aspirin in effectual doses for a period of two to three weeks. Analysis of the results of this treatment shows that the patient survived in 75% of the serious cases of cardiac rheumatism and in 29% of simple cases, that in 50% of first attacks the patients were improved, and that in 96% of rheumatic cases without cardiac complications the patients were healed without valvular sequelæ. These results tend to show that the efficiency of this type of hormone treatment is greater than with small amounts and than that of the aspirin treatment.

The results of relapse prophylaxis in acute articular rheumatism in 377 children (56·9% with latent heart diseases) are also reported after a period of observation varying from six months to five years and seven months, with an average of two years and three months, by Mozziconacci *et alii*.[2] The prophylactic therapy consisted of one gramme of sulphadiazine, 800,000 units of penicillin G per day for one week by mouth, followed by 200,000 units and then 400,000 units, injections of 1,200,000 units of benzathine-penicillin G every 28 days and 200,000 units of penicillin V by mouth. The percentage of relapses per year among the 377 subjects under prophylactic treatment for a total period of 587 patients-years was 2·8 (17 cases). This percentage drops to 0·8 when one considers only the patients strictly following the prescribed treatment. By comparison, the percentage of relapses among the 167 children who stopped the prophylactic treatment for a total period of 273 patients-years was 20·5 (56 cases). Clinical cases of throat infections due to beta-hæmolytic streptococci were observed in 5·2% of the children under continued treatment and in 15·3% of those having interrupted the treatment. Treated with curative doses of antibiotics, these infections were followed by relapse in 10% (three cases) and, when untreated, 53% (31 cases) of the children.

J. M. Crime[3] has tested the new antispasmodic 3828 R.P. ("Lispamol"), a derivative of phenothiazine, on a group of 42 patients, including 24 with spastic colitis (22 of which were meta-amœbic), six with renal colic, originating from lithiasis, and 12 with various painful afflictions (colitic pains, gastralgia of spasmodic origin, dysmenorrhœa). The medication was generally administered by mouth in a daily dose varying from 50 to 150 milligrammes, and was continued for variable lengths of time up to four months. In certain cases, notably in renal colic, intramuscular injection was utilized in doses from 50 to 150 milligrammes per injection. The author concludes from this clinical investigation that 3828 R.P. presents an undeniable advantage in: (i) Spastic colitis, in which it quietens the painful sensation and regularizes the intestinal transit. In the majority of cases, the effect of the treatment on constipation has been very appreciable, regardless of whether the latter was an element of the colitic syndrome or independent from this. (ii) Acute attacks of renal colic resisting standard antispasmodics, where the sedative effect was remarkable. In the clinical field, the tolerance to 3828 R.P. was excellent in the majority of cases. Physiological examination carried out on a certain number of patients further showed that the drug, even during prolonged treatment, had no adverse effect on the different bodily functions.

Professor M. Levrat and H. Romier[1] report on their experiences in 73 cases of infected cholelithiasis treated with antibiotics. Bacteriological examination during cholelithiasis very frequently shows infection of the common bile duct in choledocholithiasis, not only in nearly all febrile, but quite often also in afebrile cases. On the other hand, samples of the vesicular bile are often sterile (43%), both in acute and in chronic cholecystitis. The tendency is therefore to dismiss the factor of infection and to attribute the occurrence of vesicular damage to mechanical, chemical or vascular factors. It should be noted, however, that the results of cultures from vesicular wall fragments are much more often positive, and it has been established that post-operative mortality and morbidity vary parallel with biliary infection. This in itself justifies trying antibiotic therapy in infected lithiasis. The microbes encountered are of two types: Gram-negative bacilli (colibacilli, protei) and Gram-positive cocci—in general, streptococci. Under normal conditions, all antibiotics are eliminated by the bile in a concentration generally greater than that of the blood, approximately equal in the common bile duct and in the gall-bladder, which seems to have only a passive role as reservoir. In infectious lithiasis, elimination is rather subject to discussion. None occurred in cases of severe hepatic insufficiency; it seems on the contrary normal in obstructive jaundice if the liver is intact, and there is at the most a certain delay in elimination. If we class the antibiotics in the order of their importance in biliary elimination, spiromycin ("Rovamycine") and erythromycin take first place (the rate in the bile may reach 50 times that in the blood); then come the tetracyclines (5 to 15 times); and after these, penicillin, streptomycin and chloromycetin, which are less favourable in this respect.

After recalling these observations, the authors give the results of their experiences in 73 cases of infectious lithiasis. Clinical results are generally good in acute cholecystitis and lithic cholangitis. The authors believe that antibiotic therapy is absolutely efficacious in certain cases of cholangitis leading to uræmia. The action on the pathological lesions is evidently more difficult to evaluate. Experience shows that obtaining stable apyrexia does not always correspond to anatomical healing. This divergence between clinical and pathological results is the great criticism to be made of the antibiotic therapy. Post-operative development undoubtedly benefits from antibiotic treatment.

The conclusion is that in all cases, antibiotics must be used in sufficient amounts and for a sufficiently long period after the fever drops. The principle of systematic surgical intervention in cases of infectious lithiasis must be retained. In a good number of cases, antibiotic therapy does permit operating after the acute infection has been controlled by medication. In acute cholecystitis it produces more satisfactory delayed intervention with improved general condition and makes possible radiomanometric examination of the common bile duct. In infectious choledocholithiasis, the pre-operative medication treatment is even more important. Every effort must be made to turn over to the surgeon patients free of fever and, when possible, icterus. The authors apply the same rule to uræmigenic cholangitis.

M. Bolgert and G. Levy draw the lessons of 10 years in treating syphilis with their methods.[2] The treatment of early syphilis is as follows: an intravenous injection of 10 milligrammes of mercuric cyanide for three consecutive days, administration of one million units of soluble penicillin over a period of three days and then for 14 days one million units daily, given in two injections, so that the

[1] *Semaine hôp.*, May 22, 1957 (*Annales de Pédiatrie*).
[2] *Semaine hôp.*, May 22, 1957.
[3] *Semaine thérapeutique*, June, 1957.

[1] *Rev. lyon. méd.*, May 15, 1957.
[2] *Presse méd.*, July, 1957.

patient receives a total of 15 million units. Three hundred and six subjects (62 with seronegative primary, 107 with seropositive primary and 137 with secondary syphilis) have been treated since March, 1947. Sixty-three patients (20·5%) were lost from sight, including 43 which had been "negative" for several hundred days. Of the 243 patients followed through, 213 are clinically normal and "seronegative", including 164 during a period of from 1000 to 3400 days. Seventeen subjects presented authentic clinical reinfection. The authors consider two cases as clinical failures and four cases as questionable. They observed seven "seropositive" cases free of any clinical symptoms, which raises various hypotheses. Except in one case which was analysed, all spinal taps were shown to be normal, and none of the 37 children, born to women treated, presented signs of congenital syphilis (analysis of 254 Nelson tests). It may be concluded, even under very strict examination, that the method produces satisfactory results in 94·5% of the cases.

Allergy.

Although the skin affections in allergy to antibiotics have been the subject of numerous investigations, respiratory affections have been described very little and even hardly mentioned.

André Jacquelin *et alii*[1] have observed 44 cases from rhinitis and spasmodic tracheo-bronchitis to fully develop severe asthma. In some cases, the asthma manifested itself after antibiotic treatment of patients who had never had asthma before, but a third of them were found to have had other allergic symptoms in their family or personal history. In other cases of former asthma sufferers, the antibiotic treatment brought on a flare-up, a relapse or a manifest aggravation of asthma. Allergic skin affections were associated with respiratory affections in eight cases. All the antibiotics in current use were shown to be capable of precipitating allergic asthma reactions. Aerosol medication appears to be particularly harmful (12 out of 44 cases).

Physiology.

E. Housset *et alii*[2] have investigated the physiological characteristics of ascitic fluid in a group of 39 patients consisting of 28 with alcoholic cirrhosis and 11 with ascitic neoplasia. Some of the biological tests (quantitative analysis of total proteins, fibrinogen, proaccelerine, proconvertine) revealed themselves as not permitting diagnostic differentiation between the two groups of patients. On the other hand, the quantitative analysis of prothrombin in ascites gives very different results for cirrhotic patients from those for other patients which permit ætiological diagnosis in the laboratory. In cirrhotic ascites, the prothrombin content of the serous fluid is always low and generally less than the maximum of 13%. In contrast to this, the prothrombin concentration in neoplastic ascites is very high, with a minimum of 35% and often higher. Here is an easy test permitting ætiological diagnosis with near certainty if clinical examination does not make it possible to reach any definite conclusion.

Professor M. Bernheim *et alii*[3] have investigated the plasmocyte count in 130 cases of acute articular rheumatism under their personal observation. The spinal taps were nearly all made at the point of a spinal process. In the acute stage, the plasmocyte count was constantly found to be high, with an average of 5·6% of indicated elements as against 0·4% normally. The cortisone treatment rapidly reduces the count. This reaction seems to the authors one of the most reliable tests of infectious endocarditis. It is also encountered in other affections due to hæmolytic streptococcus (Sydenham's chorea, scarlet fever, acute nephritis of children). It is the reflection of the immunological conflict which engenders these different affections through the intermediary of the organisms. Examination of myelograms permits one to distinguish a similar humoral mechanism of an infectious process and to draw therapeutic deductions particularly concerning cortical therapy and its efficaciousness in certain cases of acute nephropathy due to a pathogenic mechanism similar to that of acute articular rheumatism.

Cardio-Vascular System.

L. Gallavardin[4] brings the result of observations on 50 hospital patients of Professor Roger Froment at Lyon. The ætiological record shows an identical frequency in both sexes. The average age of the patients was 55 years (13 to 80 years of age). No other cardiopathy existed in 30 of the patients, except for high blood pressure. In 15 cases there was a clinical finding of coronary involvement (10 angina and five infarctions); in four others there was some other cardiopathy (mitral stenosis, right or left ventricular insufficiency); one patient had seropositive reactions for syphilis. In one-half of 14 autopsies, the coronary arteries were found to be intact. In 41 patients, the characteristic dizziness and fainting of the Morgagni and Adams-Stokes syndromes were definitely present. In addition to their usual short duration, the author has noted some fainting spells lasting more than an hour. Recording during syncope in four subjects showed one case of ventricular standstill, two of typical ventricular fibrillations, and one of pronounced ventricular tachycardia. In one-third of the cases, the electrocardiogram showed a steady block, in another third a partial or total block varying from day to day, in six cases a partial block or a sinus rhythm, depending on the particular day, and in three cases a normal sinus rhythm except during attacks. When the electrocardiogram is not conclusive, diagnosis can be facilitated by a recording under sinocarotid compression. This requires great care, and, when it is used, the patient must be lying flat. It should not be used in aged or arteriosclerotic individuals. The author uses ephedrine nearly exclusively as basic treatment. Depending on the severity of the case, the amount consists of 100 to 150 milligrammes per day on the average, but can attain very high doses for subjects with a particularly low cardiac automatism (up to 240 milligrammes per day). However, the much less active atropine (two to three milligrammes per day) can render good service in cases of frequent ventricular extrasystole, if it is certain that the circulatory stoppages are due to attacks of ventricular fibrillation, counter-indicating the use of sympathomimetics. Procaine amide ("Pronestyl") can be utilized in these cases (in perfusion by mouth). The author nearly always prescribes nitrites as adjuvants. When the coronary ætiology is concerned, a coagulant treatment is prescribed systematically. In very rare cases, a specific ætiological treatment can be utilized, such as cortisone. Prognosis is always difficult to make, if not impossible. Everything depends on the character of the ventricular automatism, and we are entirely ignorant of its nature.

J. Kunlin and C. Bitry-Boely[1] report on 66 cases of aortic terminal obstruction observed in the clinical station of the late Professor Lériche. Diagnosis was confirmed in 51 cases, either through aortography (44 cases) or during an operation or autopsy (seven cases). The 15 remaining cases were classified as aortic obstruction on the basis of various clinical findings. (i) The Lériche syndrome of clear aortic terminal obstruction, called "primitive form", with a clinical start of bilateral and symmetric peripheral ischæmia, is an exception. None of the three cases (in 66 patients), apparently primitive at the start, affected only the aortic terminal without the iliac arteries. (ii) An aortic terminal obstruction is most often secondary to an original iliac obstruction, initially unilateral and then becoming bilateral at a second time. (iii) The difference in the clinical evolution of an aortic obstruction is caused by the presence or absence of obstructive peripheral or visceral arterial inflammatory lesions. (iv) Two opposing forms exist whether the start has been apparently primitive or secondary: (*a*) an obstruction localized at the aortic-iliac junction without peripheral lesions (or with a minimum); (*b*) an aortic iliac obstruction associated with multiple peripheral or visceral arterial inflammatory lesions, which is the most frequent and the most doubtful in prognosis. (v) A more realistic classification of the Lériche syndrome can be based essentially on the presence or absence of lesions from generalized arteritis: (*a*) aortic or aortic-iliac obstruction without peripheral arterial lesions, a not very frequent condition, but of favourable prognosis—isolated subrenal aortic obstruction (very rare), aortic-iliac obstruction starting at the aorta (one case in 66), iliac-aortic obstruction starting at the iliac (three or four in 66); (*b*) polyarteritic form of secondary iliac-aortic obstruction, which is the most frequent (61 or 62 patients in 66)—this includes the forms of Buerger's disease which have a more serious prognosis. (vi) The best forms of treatment today are sympathetic infiltration and sympathectomy or adrenalectomy. Nephrectomy has permitted the healing of a Goldblatt syndrome. Grafting has limited indications. Vasodilators given by mouth or by subcutaneous or intramuscular injection have a too diffuse action. In a few patients, a diet without fat and anti-cholesterol medication seems to help appreciably. However, the treatment remains still very symptomatic and insufficiently ætiological in the absence of precise knowledge.

A. Lapras[2] has observed 24 cases of frost-bite during the 1955-1956 winter at Lyon. From the ætiological point of

[1] *Semaine hôp.*, July 10, 1957.
[2] *Presse méd.*, June 29, 1957.
[3] *Presse méd.*, May 15, 1957.
[4] *Lyon méd.*, June 23, 1957.

[1] *Presse méd.*, May 11, 1957.
[2] *Semaine hôp.*, June 30, 1957.

view, the role of intense and dry cold is indisputable. Insufficient clothing and poor social conditions are favouring factors. Eighteen of the patients belonged to the very poor classes. Clinically, the development of frost-bite passes through three successive stages. The first phase is marked by a painful tingling, followed by the sensation of acrocyanosis. The second phase appears under continuing exposure to cold, when permanent lesions form at the level of a white, hard and icy distal area. In outlining the exact topography of the permanent lesions, arteriography gives the best indications for prognosis. The third phase is characterized by scarification. Except in the beginning, the evolution of the frost-bite is painless. General treatment consists in the administration of antibiotics, anti-tetanus serum, cardio-vascular analeptics, vitamins *B* and *C* and a high Calorie diet; nor should Todd's potion and intravenous injection of alcohol be neglected. The immediate local treatment consists of disinfection and asepsis of the frozen extremity without special cooling or warming. The best treatment of the lesion itself is sympathetic block with "Novocain" through lumbar, stellate or intraarterial infiltration. The essential factor in success is early treatment. Amputation should be delayed as long as possible, after separation of dead from living tissue, and has been practised between the thirtieth and ninetieth days. Pathological examination has confirmed that the lesions are most intense at the surface, with the epidermis more or less necrosed. The mechanism of frost-bite seems to consist of an initial spasm, which is followed by metabolic asphyxia of the frozen area, and this explains the definitive protoplasmic damage.

Dermatology.

Edwin Sidi *et alii*[1] have treated 25 cases of particularly persistent allergic dermatoses (urticaria, chronic eczema) by delta-1-dehydrocortisone. The initial dose (20 to 30 milligrammes) is kept up until disappearance of the acute symptoms. The dose is reduced progressively until elimination of the trouble or establishment of a maintenance dose of five to fifteen milligrammes in chronic dermatitis. The immediate results are excellent, and the prognosis is favourable.

Neurology.

Paul André[2] has surveyed 1740 subjects in three hospitals of the Paris area specializing in the treatment of the various phases of poliomyelitis. He concludes from this survey that the absence of the tonsils does not favour the occurrence of paralytic forms. Among the 1740 cases, 113 (6·4%) had undergone tonsillectomy. This percentage varies somewhat with age, and was 8·3% among children from five to fifteen years of age. However, the absence of tonsils to a certain extent favours the bulbar localization of the disease. The percentage of tonsillectomies among 1590 spinal cases was 5·2 compared with 19·3 among the 150 bulbar cases. It does seem that tonsillectomy as such is capable of precipitating an attack of poliomyelitis and was assumed responsible if the infantile paralysis occurred within the following 30 days. This was encountered by the author eight times among the 113 cases with tonsillectomy. Bulbar localization was frequent (six out of eight cases), particularly in children aged from two to five years (five in five cases). The conclusion of this survey shows that tonsillectomy should not be performed needlessly, particularly prior to the age of five years. Andre does not think that the statistically minor risk should prevent tonsillectomy between April and November, the period of greatest incidence for poliomyelitis, because this operation, performed during the cold season, brings important risks of infectious complications.

Pierre Lepine[3] draws up the balance sheet of the 75 to 100 million vaccinations against poliomyelitis made during 1956 by means of the inactivated vaccines of the type developed by J. A. Salk. The vaccine prepared by the Pasteur Institute in Paris consists of a formaldehyde-treated solution from cultures of the three types of poliomyelitic virus. The three subcutaneous injections (one cubic centimetre each) do not cause any local or general reaction. It is certainly too early to draw any definite conclusions about efficacy of vaccination, but research in the U.S.A. shows the following points: (i) Its efficacy cannot be doubted. The vaccination campaign in the United States has lowered the incidence of the disease to the average for the years 1931 to 1945. (ii) The protection through vaccination is not total. Poliomyelitis may occur in vaccinated subjects, but the frequency is one-half to one-fifth of that among non-vaccinated subjects. Poliomyelitis in vaccinated subjects is most often not paralytic. During the Chicago epidemic in 1956, in 269 out of 832 cases the subjects were vaccinated, but only very exceptionally were they those who had received complete vaccination, i.e., the three injections required to produce immunity. (iii) The vaccination at the present time has little or no influence on the frequency of non-apparent forms of the disease. (iv) Systematic vaccination during an epidemic period seems to prevent the spreading of the epidemic. The duration of immunity at present does not seem to exceed one year and therefore requires one booster injection one year after initial vaccination. The use of attenuated but living vaccines, introduced by way of the digestive tract, has not gone beyond the experimental stage and cannot yet be recommended.

Professor S. de Seze *et alii*[1] return to the description of acroparæsthesia from observations on 220 cases. The term acroparæsthesia is generally accepted, even though this does not concern paræsthesia but dysæsthesia—i.e., spontaneous, abnormal and non-painful sensations of pricking, tingling, numbness or swelling, which are located in the fingers and hands, and generally easily supported, but which can become distressing and sometimes even unbearable. It can also be accompanied by a deep-seated constricting or numbing true pain, located in the forearm and the arm. Unilateral or bilateral acroparæsthesia is intermittent and occurs during the second part of the night or upon awakening. During the attack, there often exists a hypoæsthesia or even paresis of the fingers, but no visible vasomotor modification. Outside of the attacks, there may exist a slight hypoæsthesia of the finger tips or occasionally a thenar amyotrophy. This affection occurs more frequently in women; it often appears during the menopause, but not infrequently before this. Certain observations may help in diagnosis. Certain forms are total, affecting the five fingers and the hand. Others are partial and confined to two or three fingers, evoking radicular pain. However, any number of combinations of the two forms exists, so that it is difficult to draw definite conclusions on the mechanism of the affection. Acroparæsthesia is quite often associated with tingling and burning in the legs, but the two affections certainly have very different mechanisms, and we can only deduce from this an analogy of terrain. The same is true of the association with migraine. The authors note that they have never encountered acroparæsthesia in the lower limbs. X-ray films of the neck often show arthrosis, either diffuse or localized. But it is not unusual to find the spine completely normal (54 cases), and the anomalies observed lose their diagnostic value owing to the age of many of the subjects. There exists undoubtedly a connexion with cervicobrachial neuralgia, which is itself surely due to root pain, but these are isolated cases. The barbiturates and vasodilators, singly or in association, often constitute excellent means of relieving the patient, and their use may be accompanied by endocrinotherapy and stellate infiltration. Sometimes treatment for cervico-arthrosis (radiotherapy, traction, manipulation, thermatology) or correction of the hypotonus of the suspensory muscles of the shoulder by massage and gymnastics will be helpful. Massage treatment of cellulitis in the nape and shoulders should not be neglected.

Professor S. de Seze *et alii*[2] present a complete study of 100 cases of *sciatica paralysans*, based on a precise description of the clinical picture of the condition, and compare the information furnished by this study with the data from an anatomical study of the vascularization of the medullary roots. They propose a physiopathological and pathogenic explanation of *sciatica paralysans* based on damage to the root artery. Just as with common sciatica, *sciatica paralysans* is due in most cases to a disko-radicular conflict from herniation of a disk. The topography of the root arteries shows that they can be affected by the conflict: their area of distribution, their relation to the vascularization of the medullary cone, their supply ducts enable the authors to furnish a logical and coherent interpretation of the very particular clinical aspects of *sciatica paralysans* and especially of the anomalous, atypical and discordant cases observed in regard to pain, sensory, motor, reflex and electric disorders, and the manner of onset and evolution. The idea of a vascular factor in the mechanism of *sciatica paralysans* permits the authors to draw valuable conclusions in regard to the therapeutic treatment. If pain dominates the picture, surgical intervention is required. If the pain is secondary or bearable or has disappeared, there are two possibilities. If the onset occurred more than three months previously, the damage through ischæmia is already permanent and motor recovery not very probable. One

[1] *Semaine thérapeutique*, July, 1957.
[2] *Ann. oto-laryng.*, April-May, 1957.
[3] *Vie méd.*, June, 1957.

[1] *Semaine hôp.*, July 10, 1957.
[2] *Semaine hôp.*, May 10, 1957.

should not operate and should restrict treatment to medication for nervous regeneration, from which no certain results can be expected. If the case is recent, the best chances for complete cure lie in undertaking surgical intervention as early as possible.

Nutrition.

The statistics of Pierre Uhry *et alii*[1] are based on 309 diabetic patients treated with synthetic "hypoglycæmiants" and show 229 cases of success (74%), but with appreciable variations depending on age. Although the maximum action lies in patients between 40 and 70 years of age, 66% of success was observed during juvenile diabetes. The discovery of the synthetic hypoglycæmiants offers a new method in treatment of a great number of cases, but does not free the patient from dietetic supervision and a more frequent biological examination. However, D 860 ("Dolipol") and RP 2259 ("Glipasol") seem to require only quarterly checks—by using them in small amounts for control—after the four to six weeks of shock treatment. The synthetic hypoglycæmiants have been utilized on 15 diabetic subjects from 18 to 30 years old in whom the date of onset of diabetes was recent—five months on the average, and in any case less than one year. Positive results were achieved in 10 cases; in five cases the treatment was unsuccessful. When a juvenile diabetic has the chance of being diagnosed during the first year, it seems promising to attempt treatment—under strict hospital control—with the synthetic hypoglycæmiants.

The use of nutritive solutions of amino acids, given both intravenously and by mouth, has been investigated by Pierre Uhry and G. Marcel[2] on some 30 patients with various affections: (i) cirrhotic patients receiving no other treatment, (ii) cirrhotic patients, in association with other treatment, (iii) patients with affections resulting in serious nutritional deficiency. The product utilized ("Trophysan") contains the principal amino acids, sorbitol, glycocol, inositol, hydrochloride of pyridoxine and nicotinic amide, and potassium, sodium, calcium and manganese. The treatment has never presented any major inconveniences in use, was well supported even by the gravely sick, and even resulted in a veritable resurrection of a patient in spite of a high urea level. However, it would seem that the contribution of the amino acids is especially helpful in cirrhotic patients.

Professor A. Lamache *et alii*[3] (Rennes) present a study of cortisone and hydrocortisone therapy for cirrhosis of the liver in chronic alcoholics based on 29 cases (14 non-ascitic and 15 ascitic cirrhoses). Clinically, the favourable results related particularly to restoration of appetite, improvement in general condition and return of free diuresis. Physiologically, the protein equilibrium seems to merit consideration in the majority of cases. The action of suprarenal corticotherapy usually permits important restoration of the protein balance or, at the least, far-reaching restoration of the general condition of the patients. Histologically, the modifications shown by periodic biopsy do not have a spectacular amplitude. In some cases, however, the disappearance was observed of certain inflammatory lesions which accompany the evolution of hepatic fibrosis; and, in other cases, far from favouring fatty degeneration, suprarenal corticotherapy brings about a disappearance of the latter, which often makes way for reactional hyperplasia of the mesenchyme and the Kupffer cells. It is interesting to note that it is already possible to obtain substantial results, through cortisone and hydrocortisone, in cirrhosis of the liver. Provided that disintoxication and a chloride-free diet are arranged in association with the hormones, any incidents or accidents of hormonal saturation take second place to the clinical and physiological gains.

Psychiatry.

A. Deschamps and J. Madre[4] investigated the effect of a new "neuroleptic" (7044 RP, "Nozinan") on 26 mainly aged subjects (five over 60 years and the others over 40 years, except two). The 7044 RP was used in hospitalized and other patients. The always moderate amounts, preferably administered orally or rectally, were proportioned as follows: three to four doses during the day, increasing in the evening, in a total dosage of 50 and then 75 milligrammes per 24 hours progressively increased until quietening of the symptoms or an amount of 100 to 125 milligrammes per 24 hours was attained; 250 milligrammes were given in two cases. There was never any inability to tolerate the drug provided that the patients were watched very closely from the cardiovascular and psychic points of view to adjust the dosage to individual needs. It seems most indicated in all forms of melancholia. Regardless of the age of the patient, the results obtained by using only 7044 RP have been excellent, but there were no results with the forms of neurotic depression (particularly hypochondria), except a constant action on insomnia and lack of appetite. The 7044 RP definitely reinforces the action of tranquillizers, especially meprobamate, in cases of anxiety hysteria and hypermotivity. The combined use of small amounts of the two medicaments produced important and lasting improvement. After curative use of 7044 RP, it is well to prolong the treatment for patients who have resumed their social activities, but are apprehensive of a return of their former anxieties. In these cases meprobamate may slowly be substituated for 7044 RP and kept up in minimum amounts for a rather long time. In all these treatments the psychotherapeutic attitude of those surrounding the patient is very important. The neuroleptics of all kinds have the advantage of permitting an easier approach to the patient because they create a relation during the treatment which makes it possible later to engage him effectively in social therapy groups.

A study of 57 children treated with ACTH and cortisone by Kupfernik *et alii*[1] shows that the hormones rarely produce serious troubles at that age, but that on the other hand their influence on the psyche is very frequent. Disturbances of appetite and hunger are the most frequent (33 cases of morbid hunger and 18 of trouble in sleeping). Euphoria is seen much less often than in adults (two cases). The preponderant reaction seems to be depression (17 cases), followed by anxiety and agitation (seven cases), hypomanic intervals (two cases), manic states (three cases) and perceptual troubles (one case). Serious disturbances were observed in only two cases. One gave rise to a persecution mania, the other to dementia with marked intellectual deterioration, and both were accompanied by alterations in the electroencephalogram. The authors have attempted to correlate the psychological analysis of the patients by various diagnostic methods such as electroencephalography, biochemical investigations and intellectual efficiency tests. In 14 of the patients, the electroencephalogram was normal and in 21 others it showed, at least once during the sickness, alterations, which were more or less intense, rather polymorphic and little characteristic, especially of the type of slow posterior waves. Biochemical investigations seem to show that the most frequently observed variations are alkalosis and hypochloræmia. Concerning the intellectual efficiency tests, these seem to show an improvement under the influence of the drug. ACTH and cortisone do not seem to constitute valid therapeutic weapons in psychiatry, except possibly in anorexia. The benefit of hormone treatment for many somatic patients outweighs any dangers. However, it is preferable not to continue the treatment if signs of clear hypercorticism, important psychic manifestations and alterations of the electroencephalogram appear. One should also not ignore the major danger of kidney damage, with the possibilities of cerebro-vascular accidents or *periarteritis nodosa*. It is also possible that the association of hormones with a medicament such as isoniazid increases the risks of psychic complications.

Tuberculosis.

Professor P. Veran *et alii*[2] have treated 100 patients suffering from open tuberculosis with isoniazid ("Rimifon"), in association with dihydrostreptomycin or PAS or both, over continuous periods of from eight months to two years. More than three-fourths of the cases were recent, and the patients had never been treated with any antibiotics. Follow up of the healed subjects from all points of view extended over periods from six months to three and a half years specifically for 18 months in 65% and for more than two years in 41% of the cases. Among the healed subjects there were 17% of relapses and 83% of permanent cures. The percentage of relapses was 13 among non-alcoholics and 33 among inveterate alcoholics. Relapses occurred regardless of therapeutic methods or the extent and seriousness of the initial lesion. They were more frequent after treatment lasting from six months to 18 months. None were observed after treatment lasting from 18 to 22 months. They developed within a period of from eight to 26 months after the patient had been discharged as cured. Prognosis against a relapse was shown to be generally favourable under antibiotic therapy, either singly or in association with artificial pneumothorax (particularly efficacious) or with surgery (thoracoplasty or resection).

[1] *Bull. soc. méd. hôp. Paris* (meeting of June 21, 1957).
[2] *Presse méd.*, June 19, 1957.
[3] *Semaine hôp.*, May 6, 1957.
[4] *Presse méd.*, June 8, 1957.

[1] *Semaine hôp.*, May 22, 1957.
[2] *Semaine hôp.*, May 20, 1957.

British Medical Association.

NEW SOUTH WALES BRANCH: SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on November 30, 1957, at Hoylake Guest House, Leura, Blue Mountains, DR. G. L. HOWE, the President, in the chair.

Some Aspects of the Surgery of Infants and Children.

DR. SOFER SCHREIBER read a paper entitled "Some Aspects of the Surgery of Infants and Children", in which he discussed osteomyelitis, delay in the diagnosis of intestinal obstruction in the newborn, infantile hydrocephalus and acute sub-dural hæmatoma in the newborn.

Osteomyelitis.

Dr. Schreiber said that his colleague, Dr. David Dey, had recently surveyed the osteomyelitis records of the Children's Hospital and had produced some very interesting figures. In the five-year period 1945 to 1949, there were 67 admissions to the hospital for acute osteomyelitis, whereas in the recent five-year period 1952 to 1956, there were 150, or more than twice as many cases. Thus there was every indication that the number of cases admitted to hospital was increasing.

Why? In the early post-war years, penicillin was freely available, and virtually all the cases were caused by penicillin sensitive organisms. Probably many patients were successfully cured by the early administration of penicillin by the practitioner—perhaps sometimes in the preliminary septicæmic phase before overt osteomyelitis appeared—and so they did not enter hospital. The first record in the Children's Hospital of a case of osteomyelitis caused by a penicillin insensitive organism was in 1951. This contrasted sharply with the present position. It was now found that more than two-thirds of the cases were caused by penicillin insensitive staphylococci, a truly startling and important change. Whilst death from osteomyelitis was very rare indeed these days, the morbidity rate was considerable, and many of the patients had a prolonged initial hospitalization. Many required readmission on several occasions for the treatment of recurrent abscesses and for the removal of sequestra. Crippling too, might be caused, especially in those patients with involvement of the upper end of the femur, in whom loss of the femoral head, or pathological fracture or ankylosis of the hip was by no means uncommon. It was therefore very important that they should all realize that osteomyelitis was not a conquered disease, readily cured by penicillin with good results—as was, perhaps, the impression until fairly recently. Early diagnosis was of first importance; one must remember that the diagnosis was essentially a clinical one and one must not wait for confirmation of the diagnosis by a "positive" blood culture, or by the appearance of subperiosteal abscess, or for changes detected radiographically. After a clinical diagnosis was made, the antibiotic treatment should be a combination of two drugs, other than penicillin, in full dosage: preferably chloramphenicol by intramuscular injection and erythromycin. Some doctors, frightened of blood reactions, prefer erythromycin and streptomycin. The antibiotics should be given for at least three weeks.

There was no agreement about the question of early surgery in the condition. That lack of agreement was made quite clear at a recent joint meeting of the Sections of Orthopædics and Pædiatrics. There were those who advocated a return to the emergency operation of drilling the bone (to relieve tension and to obtain the organism for culture and sensitivity tests), and those who, like himself, preferred to restrict early operation to the drainage of the subperiosteal abscess, which sometimes appeared on or about the fourth day from the onset of the illness.

The difficulties were well illustrated by some recent cases.

Case I. A girl, aged five and a half years, was admitted to hospital in August, 1956, some 30 hours after the onset of fever and acute pain and tenderness in the lower third of her left femur. Blood samples were taken for culture, and she was placed on massive doses of penicillin (the routine treatment in 1956). Three days later she still looked very ill, a subperiosteal abscess was evacuated, and the antibiotics therefore were changed to chloramphenicol and erythromycin. Blood culture yielded a penicillin insensitive staphylococcus. Her subsequent progress was perhaps best illustrated by an X-ray examination made six weeks later which showed a sequestrum and a pathological fracture—the unhappy result of thorough penicillin treatment of a reasonably early case of osteomyelitis.

Case II. A boy, aged ten years, was admitted to hospital in June 1957. He had been well, except for recurrent boils until three days before, when he developed pain in the left hip and a high fever, for which he was given penicillin by his doctor. On his admission to hospital, a diagnosis of septic arthritis and osteomyelitis of the upper end of the left femur was made, and he was given full doses of erythromycin and streptomycin. Blood cultures later yielded a penicillin insensitive organism. His general and local condition rapidly improved, but as his temperature was still 101° F. on the third day of his treatment, his hip joint was drained. An X-ray picture taken 10 weeks after the onset showed that the head of the femur was sclerotic and necrosed and appeared to be separating from the neck.

Case III was an example of the frequent mistake in diagnosis which resulted from confusion with rheumatic fever. The patient was a boy admitted to hospital in March, 1957, with a swelling of the lower third of his left tibia. An X-ray picture showed marked irregular osteoporosis with a little periosteal reaction. The diagnosis appeared to lie between chronic osteomyelitis and neoplasm. An abscess subsequently developed, and a penicillin insensitive organism was grown from it. Some five weeks previously he had become feverish and was given sulpha tablets and penicillin for two days. His knees and ankles were painful and swollen, and rheumatic fever was suspected. These swellings susbided save for his left ankle.

Wilfred Gaisford, in "Pædiatrics for the Practitioner", writing of the different diagnoses between acute rheumatism and acute osteomyelitis said: "Formerly, in cases of doubt, a therapeutic diagnostic test was carried out, giving full doses of salicylates for 24 hours. If the pain was relieved and the temperature fell, the diagnosis of rheumatism was proven correct. If not, osteomyelitis or suppurative arthritis was considered. Nowadays the procedure is reversed, and any doubtful case is treated as one of acute infection with massive chemotherapy, and if no improvement occurs, the diagnosis of rheumatism becomes more likely, and salicylates may be substituted for the antibiotic." He recommended penicillin in massive doses as the antibiotic, which may have been suitable in Great Britain in 1953, but was most certainly unsatisfactory in New South Wales in 1957.

Case IV was another example of diagnostic difficulty and of the sad results of delayed diagnosis. The patient was a boy, aged 12 years and nine months, who was admitted to hospital in January, 1957. Some weeks previously a tentative diagnosis of poliomyelitis or meningitis had been made because of his delirium and general symptoms. It was well known that the local signs and symptoms of osteomyelitis may be overshadowed by delirium and toxæmia in acute septicæmic cases, and unless the diagnosis is considered and a careful examination made of bone ends and joints, the true diagnosis may become evident only after much damage has occurred. In this case an X-ray picture showed that the most profound destruction of most of his femur had resulted, with separation of the head.

Delay in Diagnosis of Intestinal Obstruction in the Newborn.

Dr. Schreiber said that delay in the diagnosis of this condition was still common, and caused a certain proportion of the deaths. That was a great pity, as with recent advances in fluid balance and surgical technique, the prognosis was very much better for those conditions than it was some years ago.

Dr. Schreiber instanced a baby girl, aged 13 days, who was seen in September, 1957, with advanced intestinal obstruction. The absence of an anus had not been noted by the obstetrician, nor by the nurse or even by the mother until 10 days after birth, when marked distension and vomiting were present. A small fistula into the upper vagina had given her some partial relief in the first few days of life. The classical symptoms were (i) bile-stained vomiting, (ii) constipation, and (iii) abdominal distension.

However, some vomiting in the first week was perhaps sufficiently common to mislead a doctor into disregarding it until its persistence and offensive nature made its obstructive origin only too evident. A definitely bile-stained vomitus was abnormal, and unless the cause was evident, should be considered an indication for plain X-ray examination, and not merely for further observation. (A yellow vomit might be gastric contents only, coloured by carotinoid pigments present in the colostrum. If in doubt, the vomit could be easily tested for bile pigments with Fouchet's reagent.)

Dr. Schreiber said that this condition was often missed, and the infant was referred for treatment at a late stage because of the misleading character of the stools. Usually the stools of these babies with intestinal atresia were smaller, drier, and grey-green in colour, rather than having

the tarry appearance of normal meconium. However, in some cases the stools might resemble normal meconium very closely in gross appearance. In an analysis of a group of cases at the Great Ormond Street Hospital, Louw showed that 40% of infants with intestinal atresia—a complete obstruction—nevertheless passed meconium stools, which was in curious contrast to the incomplete obstruction of Hirschsprung's disease, in which very often meconium stools were not passed until two or three days after birth. Abdominal distension too, might be a misleading sign, for the time at which it occurred was variable. In the usual case of low small gut obstruction, distension was an early and prominent symptom. But in some cases of high obstruction, especially in the common case of duodenal atresia, it might be absent because of the repeated emptying of the stomach by vomiting. Thus the essential feature in diagnosis was to submit any infant who continued to vomit during the first one or two days of life to plain radiography of the abdomen in the erect position. Fluid levels in distended bowel indicated obstruction, and usually, too, the site of the obstruction could be localized.

Investigations with barium were unnecessary, and might be dangerous. Given by mouth it might become inspissated and clog the intestinal tract, or it might be vomited and inhaled. Given by enema, to a case of small gut atresia, the barium would often fail to run through the tiny colon, which had never been distended with intestinal contents, and an incorrect impression of colonic obstruction might be entertained. On the other hand, the colon might appear quite normal. Dr. Schreiber then showed a skiagram of a patient with long segment Hirschsprung's disease involving the entire colon. The barium was retained in it in an apparently normal fashion, but Dr. Schreiber drew attention to the dilated small gut above the functional obstruction of the aganglionic colon.

What were the advances in surgical technique which had improved the prognosis of these conditions? Firstly, concerning small gut atresia, Nixon had shown that, despite its fairly normal appearance, the distal few inches of the terminal bulb of bowel above the atresia were functionally incompetent. It did not produce normal peristaltic waves. Thus if an anastomosis was made to this dilated but otherwise apparently normal bowel, no contents were passed, and the child remained obstructed. It had been found that a good result could be achieved in one of two ways: either some six to 10 inches of the terminal bulb was resected, and an end to end anastomosis was made between the dilated proximal gut and the minute atretic distal gut, or an adequate decompression of this terminal bulb was achieved. In duodenal obstruction, gastro-intestinal suction would usually suffice, but for the common ileal atresia, either exteriorization or a small enterostomy above the anastomosis was necessary.

Other important factors leading to a better prognosis were the improved methods of dealing with Hirschsprung's disease and the better understanding and treatment of the various forms of congenital abnormality of the anus and rectum. In the past, operative attempts to produce a normal functioning rectum and anus rarely proved successful, and many children were left after a perineal operation with a stenosed and incontinent perineal anus, or with a permanent abdominal colostomy; those disastrous results were due to the fact that the current views of the embryology, anatomy and surgery of ano-rectal malformations were incorrect, and understanding of the ectopic anus and the covered anus had given enormously improved results. Combined abdomino-perineal operation (instead of a perineal operation alone) of the common rectal agenesis (Gross Type III) had also given infinitely better results. Advances in fluid and electrolytic balance and in antibiotics were very important. Thus it had become most important not to miss the diagnosis of those conditions.

Infantile Hydrocephalus.

Dr. Schreiber also spoke about the improved prognosis in infantile hydrocephalus since the era of shunt operations, employing non-irritant plastic tubes to direct the cerebrospinal fluid to absorptive or excretory channels outside the central nervous system. He said that in the past, practitioners had not been very concerned with the early diagnosis of that disease, and had often waited to make certain of the diagnosis before mentioning the dire possibility to the parents and before referring the case for investigation and treatment. By that time the condition was often advanced, and the hydrocephalic dilatation of the ventricles had caused marked destruction and thinning of the brain tissue. To achieve acceptable results it was essential that operation be performed whilst an adequate thickness of brain tissue still remained. Whilst it was true that some cases of hydrocephalus progressed very slowly, others progressed very rapidly, and it was therefore necessary to consider all cases of possible hydrocephalus as requiring urgent investigation as soon as the diagnosis was suspected.

Dr. Schreiber proceeded to discuss the clinical features, diagnosis and treatment of infantile hydrocephalus. (An article by Dr. Schreiber on this subject has already appeared in a previous issue—M. J. AUSTRALIA, 1957, 2: 640.)

DR. JOHN COUANI asked Dr. Schreiber how long in osteomyelitis one continued to give antibiotics by injection and what were the indications for stopping therapy.

Dr. Schreiber, in reply, said that in the acute stages, "Chloromycetin" was given by injection for the first week. Erythromycin was not given parenterally unless an intravenous drip administration of fluid was in operation. It took about one week for the temperature to return to normal. The question as to how long antibiotics should be given had never been answered. Aird had found viable organisms in the marrow after one week. Since then it had been customary to give antibiotics for three weeks. In the United States recently, the practice in some clinics had been to give antibiotics for up to six weeks. Dr. Schreiber said that he himself gave antibiotics for three weeks in ordinary cases, and in fulminating cases of osteomyelitis of the hip he often gave them for six weeks.

Dr. Couani said that the reason why he had asked the question was that he had in his care a boy with an organism insensitive to penicillin. It was sensitive to streptomycin and "Chloromycetin'. Although the correct drugs had been given, pus was still being discharged after as long as six weeks. Dr. Couani wondered whether he should continue to give antibiotics until the pus dried up, or stop giving them when the boy's clinical condition was better.

Dr. Schreiber said that drugs should not be given until the pus dried up, but only until the clinical condition had improved and the acute phase of osteomyelitis had passed. Adequate drainage was vitally important, and three or six weeks' antibiotic therapy was sufficient. Sometimes patients returned again and again to hospital for drainage, but they should not be given antibiotics; there was no indication for that treatment. Some surgeons were still giving penicillin as the first antibiotic, and drilling the bone in order to relieve tension and to obtain pus for culture, to find out the sensitivity of the organism. Dr. Schreiber said that he himself would rather do it the other way round. If the proper antibiotic was given, probably no pus would ever form.

DR. W. F. J. CAMMACK asked Dr. Schreiber to describe the plastic tube used in the treatment of hydrocephalus.

Dr. Schreiber said that the type of tube varied with the type of operation. The tubes were made of animal-tested polythene. In the ordinary type of communicating hydrocephalus a lumbar laminectomy was performed, the peritoneal cavity was opened and one end of the tube was placed in the lumbar subarachnoid space and the other end between the liver and the diaphragm if the patient was a boy and in the Fallopian tube if the patient was a girl. For upper shunts the tube went from one lateral ventricle and passed subcutaneously over the back of the head. More recently Graf and Hamby in the United States had made an important variation in that shunt, by which the tube was placed deep to the skull and passed downwards through a hole made in the *tentorium cerebelli*. For upper shunts rubber tubes were used, because the brain was less sensitive to rubber than the nerve roots of the *cauda equina*, and rubber was softer and less likely to dig into the brain substance.

Dr. Cammack asked what was the life expectancy of patients treated in that way.

Dr. Schreiber said that he thought it was very good. The patients did not often have a complete obstruction, otherwise they would seldom come to operation. Given time, spontaneous stabilization might often occur and a tube might cease to be required after some months or years, but of course as it did no harm, it was left in place indefinitely.

DR. E. F. THOMSON supported Dr. Schreiber in what he had said about the primary use of penicillin. Dr. Thomson said that he appreciated only too well the confusion and difficulties that arose in the minds especially of general practitioners who were faced with the treatment of such patients, often without the aid of laboratory facilities and often with the parents worrying them. He urged such practitioners not to think that they had such worries and problems to themselves. The same troubles existed in the hospitals in the city. The treatment of staphylococcal infections was a very difficult problem. It was known that there was a 25% to 30% chance that any staphylococcus would be resistant to penicillin. Therefore Dr. Thomson supported Dr. Schreiber most strongly; in the primary

treatment of an infection with a staphylococcus whose sensitivity was not known, penicillin should not be used. Other antibiotics should be used, preferably two at once. At the Royal Prince Alfred Hospital the favourite combination was erythromycin and chloramphenicol. He thought that at the Royal Alexandra Hospital for Children the use of chloramphenicol might be approached with more care, because there had been reports of aplastic anæmia resulting from its use, especially in children. Dr. Thomson did not think it a dangerous antibiotic. It had a depressing effect on the marrow, particularly on the white cells, the number of which would go down; but if the administration of the antibiotic was stopped the count would rise again. During the past year at the Royal Prince Alfred Hospital, 12,000 grammes of chloramphenicol had been used, with no case of aplastic anæmia. Dr. Thomson went on to say that two patients had entered the hospital on the same day, both with infected fingers. One, a young girl, was given chloramphenicol. Her finger recovered and she left hospital. The other, a man, was not given chloramphenicol. His finger also recovered, but he was now dead from aplastic anæmia. In England the combination of drugs was erythromycin and novobiocin. However, nearly every patient who received novobiocin developed a rash on the seventh day, with other toxic effects. It was a toxic antibiotic. Dr. Thomson said that patients were started on antibiotics given either intravenously or intramuscularly. In children the latter route was easier. He agreed with Dr. Schreiber about the duration of antibiotic therapy. When the time arrived to consider stopping the injection of antibiotics, the patients were started on oral therapy about two days beforehand; that meant that there was a satisfactory blood level. The problem of when to stop was very interesting. One had to stop sometime. A very good practical rule was that if the temperature remained normal for a week, then the administration of the antibiotic should be stopped and the patient watched to see what happened. If the temperature rose, administration could be started again, but possibly it was not necessary to give any more. There was such a thing as an irritative or allergic rise in temperature. It was a point worth remembering that a persistent rise in temperature could result from the therapy, not from the organism. It was known that the staphylococcus had become resistant to practically all antibiotics; it had become resistant last of all to chloramphenicol. However, there were many strains that were not resistant to antibiotics, but would still kill the patient. Those strains produced a very powerful toxin. Antibiotics would deal with the organism, but none would deal with the toxin. If toxin was still being produced, the patient could die from toxæmia. In the recent influenza epidemic, for example, it was an overwhelming staphylococcal toxæmia which killed the patient within 24 to 48 hours. Much work was being done at the present time on the toxins of the new strains of staphylococci, and it was hoped to develop an antitoxin. Another thing that was being tried in America was the use of gamma globulin, and it had been given in one or two cases at the Royal Prince Alfred Hospital. It was worth a trial if a patient with an overwhelming infection or toxæmia was not responding to treatment.

Some Aspects of Preventive Pædiatrics.

DR. D. KERR GRANT read a paper entitled "Some Aspects of Preventive Pædiatrics" (see page 693).

DR. N. LARKINS said that he joined issue with Dr. Grant on one point, that was the early discharge of mothers from obstetric hospitals. He had in mind the teaching of Sir William Gilliatt and Dr. Bruce Williams. They both held that obstetricians did irreparable harm to mothers by allowing them up too early after normal confinements. Dr. Williams held that no woman should really get out of bed before the fifth or sixth day. Sir William Gilliatt had said in Sydney that if obstetricians persisted in letting mothers up very early after a so-called normal confinement, they would see a high and rising incidence of procidentia, such as was seen in Lancashire mill girls. Dr. Larkins could not help thinking of the houses which he was called upon to visit, in which it was difficult to get even sufficient water to wash his hands. He would hate to conduct confinements in such circumstances. Referring to tonsillectomy, Dr. Larkins said that he, like Dr. Grant, had conservative views on the subject. However, he had one case in which the tonsils were so large that they formed a mechanical obstruction to the child's ingestion of food. He had removed the tonsils for such an indication, and had followed the progress of the child afterwards and the child had thrived well. Dr. Larkins asked Dr. Grant whether he thought such a state of affairs was a contraindication to tonsillectomy. He also asked what were Dr. Grant's views on tonsillectomy and the aftercare of a patient with rheumatic carditis. Bacteriological examination of a child with rheumatic heart disease over a long period would reveal persistent organisms. If the tonsils were removed, organisms could no longer be isolated.

Dr. Grant, in reply, said that in rheumatic fever he believed the evidence was that the removal of tonsils did not diminish the number either of recurrences or of streptococcal infections. The opinion of Professor Lorimer Dods and others working at the Institute of Child Health in Sydney was that the tonsils should not be removed on account of rheumatic fever, but only if their removal was indicated on other and quite separate grounds. Dr. Kerr Grant said that he could not argue at all against the removal of very large tonsils which were obstructing the child's ingestion of food. Referring to the early discharge of mothers from hospital, Dr. Grant said that he could not speak from the obstetric point of view, though he thought that there were obstetricians of good reputation who held contrary views, and that the anatomical and functional advantages to the woman from early ambulation outweighed those from keeping her in bed a longer time. Getting the mother up out of bed and home earlier had other advantages relating to infection and breast feeding. If she stayed in hospital she worried about what was happening at home.

DR. EILEEN CAMMACK said that she agreed with Dr. Grant. She had had three Cæsarean sections, after two of which she got up on the fourth day, went home on the fourteenth day and resumed her ordinary household duties. A stay in hospital was no rest. The routine started at 5.30 a.m. and the door kept opening and shutting almost continuously till 9.30 p.m. If a patient got up earlier and went home, she had more chance of rest and her milk supply became better established; it was better all round.

DR. D. W. BOYD referred to the question of congenital deformities and how they could right themselves naturally. He said he was interested in the example shown of bow legs which became perfect spontaneously. That might be because infantile bowing was a stage, akin to the "position of comfort" in the uterus, mentioned by Dr. Grant. The question of knock knees might perhaps be different. Was it certain that they would grow straight without interference? Did Dr. Grant think they should be left completely untreated?

Dr. Grant said that in the care of any child with peculiarly shaped legs, it was very difficult to make up one's mind whether special orthopædic treatment should be employed, particularly if the deformity was increasing. With regard to knock knees, a survey had been carried out by Dr. F. W. Clements in Canberra on a group of children whom he had followed up to adolescence. As they grew older, those who had knock knees developed limbs within normal limits. However, one did see occasional knock knees in an adult. The withholding of treatment was sometimes hard on the mother, but she could be reassured from a knowledge of the natural history of those conditions. Another consideration was the degree of disability. The question was, could the child run about as much as he liked without impediment? If not, it was a condition of "dis-ease" and needed treatment. The individual case was very hard to assess.

Dr. Howe, from the chair, said that he had a patient at the present time who was nine years old. She had come to him about four or five months previously with very severe knock knees, and was exceedingly overweight. The child was very depressed. She was extremely sensitive and psychologically she was in a bad way. Dr. Howe had sent her to an orthopædic surgeon. At the time of the meeting she was in irons. She looked dreadful, but she had lost a stone in weight and was perfectly happy and delighted that she was going to be normal. A great deal depended upon the psychological approach of the doctor. Some knock-kneed people stayed knock-kneed, and Dr. Howe thought there was a case for treating them. The most important thing was correcting their diet, which should have low starch, high protein and high vitamin contents. Possibly some corrective irons might need to be applied. Referring to the removal of tonsils and adenoids, Dr. Howe said that the public was becoming more educated. Some children definitely needed tonsillectomy and adenoidectomy. The child who was a mouth breather and who suffered from night terrors got far more hurt from the terrors than from a short stay in hospital.

Dr. Boyd referred again to the subject of knock knees. He said that at two years of age his daughter wore leg irons for four months, on specialist advice, without improvement of her knock knees. At the time of the meeting she was aged six years and her legs were almost completely normal though she had had no further treatment. The psychological damage caused by the irons was worse than that due to the knock knees.

DR. K. KENNEDY referred to immunization against tetanus. He instanced a child who had been immunized against tetanus and received a puncture wound, and asked whether it

should be ignored or whether a booster dose should be given. Referring to the oral administration of penicillin, he asked whether the streptococcus developed immunity to penicillin, and what use penicillin was in subsequent infections.

Dr. Grant said that as far as he was aware the streptococcus did not become insensitive to penicillin, so it was possible to use it on a life term basis. Also, if as occasionally happened, an acute streptococcal infection broke through, it could be eliminated by the administration of an increased oral dose of penicillin over about 10 days, or by a single intramuscular injection of "Bicillin". If a child had been actively immunized against tetanus with toxoid and received a puncture wound, he thought that the child should receive a booster dose. If the child had not been immunized, toxoid should first be given in addition to antitetanic serum, and later further doses of toxoid should be given to complete immunization.

DR. E. F. THOMSON said that resistance to antibiotics was a problem, except in the case of tuberculosis in which the problem of resistance had been solved. However, only four organisms were involved in the problem: staphylococcus, *B. coli, Pseudomonas pyocyanea* and proteus. It was true that the streptococcus could be made insensitive in the test tube, but not in the body. Referring to the question of sending women home early from obstetric hospitals, Dr. Thomson said that it might be better if women had their babies at home. That was not an obstetric question, but one of infection. The only way to prevent staphylococcal breast abscesses in the mother and infections in the new-born was not to get them out of hospital early, but to keep them out of hospital.

Dr. Howe, from the chair, thanked Dr. Schreiber and Dr. Grant for their papers and those who had joined in the discussion.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

COMPLETION OF SYDNEY HOSPITAL.

[From the *Australasian Medical Gazette*, December, 1891.]

A SUM of £25,000 has been placed on the estimates for the completion of one of the wings of the new Sydney Hospital. The wooden buildings at present in use are to be demolished forthwith and all the materials of which the wooden buildings are composed will be destroyed by fire. Pending the completion of the new wing, the patients will be removed to the Nightingale Wing designed for the accommodation of the Nursing Staff for whom temporary accommodation has been found in some private building in the neighbourhood.

Correspondence.

THE BOYLE–DAVIS GAG.

SIR: In his review of the book "Anæsthesia and Otolaryngology", by Donald Proctor (M. J. AUSTRALIA, March 22, 1958), your reviewer writes: "Frequent mention of the Davis-Crowe gag is hardly complimentary to the late Dr. H. E. G. Boyle, of London." This stimulates me to give the following information about the Davis gag and its introduction into England.

The present writer was in the operating theatre of St. Bartholomew's Hospital, London, on November 24, 1921, the first time the Davis gag was used in England. Douglas Harmer was the surgeon and Boyle the anæsthetist. It was evident that the surgeon was unfamiliar with the gag, and when the operation was concluded, some of the visitors to the theatre, among whom were two Americans, asked for information about the gag which was a novelty to all of us. Mr. Boyle said that he had just returned from a recent congress in America where Davis, who was an anæsthetist, demonstrated the gag and presented Boyle with one to bring to London in order to introduce it to his London colleagues. He said that Mayer and Phelps, then in New Cavendish Street, were going to make six gags on trial. I went to this firm the next day, and on inquiry was informed that the gags were not then completed, but that they would be available in about one week's time. The gag which the writer still uses in his practice is one of these original six.

I have never understood why Boyle's name should have been associated with this gag, because he had nothing whatever to do with its design; nevertheless it became customary in England to refer to it as the Boyle-Davis gag. It is a matter of interest that while many attempts have been made to improve the design of the gag, none have been successful.

Yours, etc.,

55 Collins Street, RAYMOND HENNESSY.
Melbourne,
May 5, 1958.

IMMUNIZATION OF CHILDREN.

SIR: In a recent circular from the Victorian Commission of Public Health a recommended course of immunization of children is set out. One cannot help wondering about the advisability of vaccinating a four-weeks-old baby against smallpox. All protective inoculations cause some upset in the patient, the degree depending upon (*a*) the material used, (*b*) the age of the patient and (*c*) individual susceptibility. Whilst admitting that the reaction to primary vaccination seems to be roughly inversely proportional to age and therefore causes very little upset in infancy, one cannot readily accept any unnecessary upset in a young baby at a time when its mother is just beginning to "find her feet". This is a time when the primiparous woman is just beginning to feel secure in her ability to breast-feed her baby, or losing her confidence and thinking of resorting to the bottle. It does not seem an appropriate time at which to perform a non-urgent procedure.

As one who has always carried out vaccination after the third triple antigen (before or after the two Salk vaccines), I should like to be enlightened by any general practitioner who has performed vaccination on a number of babies at four weeks of age as recommended in the circular.

Yours, etc.,

4 Mayfield Avenue, JAMES SMIBERT.
Malvern,
Victoria.
May 5, 1958.

FATAL CORONARY OCCLUSION AND EXTREME STRESS.

SIR: In reply to Dr. L. E. Buley's letter in your issue of May 3, 1958, I wish to express my astonishment that anyone could interpret my letter on coronary occlusion and stress as in any way critical of R.A.A.F. safety measures or procedure. My sole purpose in writing was to explain what I regard as the mechanism of coronary occlusion in a case where most of the relevant factors were widely known. There was not an iota of criticism of the R.A.A.F. in my mind even which could have revealed itself indirectly. From personal experience I have always considered the R.A.A.F. as being second to none in service flying safety. I have no opinion on the relevant merits of different ejector seats. Such technical matters are well attended to by the appropriate authorities.

At the same time I take exception to the unwarranted personal attack Dr. Buley made upon me throughout his letter, more or less attributing to my authorship the numerous reports which had been published on many occasions in the daily Press. From his letter one even gets the impression that I played some part in the prolonged Press campaign, a campaign which I blamed in my letter as contributing to the autonomic dyspraxia.[1] On referring back to the article from which I listed the data (*The Sun*, February 11, 1958), I am perturbed to read this ominous sentence: "Many people find it hard to consider the strains of the ejection and the death are unlinked—and these people include *doctors with Air Force experience.*" Perhaps this is the clue to the personal attack. If it is, it is a false clue. Until after my letter was published (March 29, 1958) I did not discuss the case with anybody. I have never discussed it outside the profession. It is significant that the daily Press has not mentioned my letter. My "account" of the

[1] Haynes, B. G. (1958), "Autonomic Dyspraxia", Lewis: London.

incidents concerned was a listing of the items published in the daily Press. As far as I know none of them had been corrected by official sources, apart from the question of the ejector seat controversy. I prefaced this summary by: "The facts appear to be . . ." As was suspected, some of the facts differed from the Press reports. Dr. Buley corrected the errors, and I am indebted to him for the correct data for consideration.

The only statement objected to, which is really my responsibility, was that the incident, comprising the Sabre becoming untenable whilst flying about 300 knots at 13,000 feet over the sea, abandoning the aircraft by ejector mechanism and falling into the sea, was a "terrifying, life and death experience". Having consulted a dictionary, Table I of Dr. Buley's letter, my subjective and objective experiences of related phenomena, and the corrected data, I consider the phrase to be accurate. I have also reconsidered the corrected data. I think the mechanism of occlusion, as in 90% of all cases of coronary occlusion, was autonomic dyspraxia.

In conclusion, sir, I, too, am concerned that the readers of THE MEDICAL JOURNAL OF AUSTRALIA should be correctly informed, and that truth, whether it be the best type of safety equipment or the actual mechanism of coronary occlusion, is in the best interests of public confidence and service morale.

Yours, etc.,

"Craignish",
185 Macquarie Street,
Sydney.
May 5, 1958.

BRIAN G. HAYNES.

MORTALITY AND MORBIDITY FOLLOWING STEROID TREATMENT.

SIR: Dr. Ray Robinson, in his excellent paper on prednisolone (M. J. AUSTRALIA, April 26, 1958), has very kindly referred to my paper on my early impressions of prednisone. Unfortunately, my later experiences were no better than my experiences of cortisone, and I abandoned the use of steroids more than two years ago. Of my original 45 patients, three have died (Case 1, psychosis followed by fulminating pneumonia; Case 8, hemiplegia a year after discontinuing drug; Case 14, suicide some time after short trial of drug). Three others are completely incapacitated by the effects of chronic hyperadrenalism. Another death occurred in a man of 44 who abandoned the drug too rapidly when he had been taking 15 milligrammes daily for 10 months.

This mortality and morbidity from prednisone is not different from that reported by Selwyn Nelson at the Hobart Congress, and by Joseph Bunim at the Toronto Rheumatology Congress. And it is equivalent to the widespread mortality and morbidity from ACTH and cortisone to which I called attention at the Sydney Congress (M. J. AUSTRALIA, 1955, 2: 592 and 673). So it appears that we are disappointed once more in our hopes of relieving our patients with steroids. Let us hope now that we all will be wary of the new fluorine derivative—four times as strong as prednisone and "better" than it—which is shortly to be unleashed on the market.

Yours, etc.,

410 Albert Street,
East Melbourne,
May 6, 1958.

MICHAEL KELLY.

TETANUS.

SIR: I would like to report in your columns a number of tetanus deaths and one survival. The survival may be of interest because recovery from *tetanus neonatorum* seems to be rare.

We have had three deaths of Indian babies each about a week old in a period of two months—none lived more than 12 hours in hospital. One death occurred in an Indian boy of eight years. He had an incubation period of seven and a half days and rapid onset of symptoms. Within 24 hours he required full anæsthesia with intravenous "Pentothal" in glucose-saline at 1·5 to 2·0 grammes per day. On the sixth day difficulty was experienced with the intravenous drip and a Ryle's tube was passed through his nose to the stomach, through which he was given 50 milligrammes of chlorpromazine and one gramme of phenobarbitone every four hours, as well as fortified milk. He also received hypodermic pethidine, 50 milligrammes every four hours, and a little "Pentothal" through the intravenous drip, until it was removed on the eighth day. From then his hydration was maintained by the oral route. On the tenth day his breathing became irregular and sedation was ceased. On the eleventh day his breathing was regular, and he seemed well, and showed signs of recovery of consciousness. His muscles contracted when he was stimulated, but there were no major spasms. The Ryle's tube was removed, perhaps unwisely, for, though he continued to pass adequate amounts of urine, he received no more nourishment, as we awaited ability to swallow. On the twelfth day he raised both arms and died quietly, apparently from exhaustion.

We were catching up on neglected work in the hospital, and feeling discouraged concerning tetanus, when another baby, aged 10 days, was brought in with inability to feed and obvious spasms of tetanus. We gave the mother no encouragement and administered 10,000 units of antitetanus serum and 150,000 units of "Procillin". The child was kept hydrated for five days by a rectal drip of one litre of glucose saline with 0·5 gramme of "Pentothal", which had been mixed for the older boy but not used. The baby was given a quarter of a grain of phenobarbitone intramuscularly when the muscular contractions seemed to be distressing, which was about twice per day. On the fifth day a nurse found that he could swallow drops of milk put into his mouth with a pipette, so he was fed with expressed breast milk, and the phenobarbitone continued. A half-bottle of "Triplopen" was given on the sixth day as the temperature had been swinging. On the ninth day he sucked from a bottle and on the fourteenth day went to the breast. If there is any merit in our treatment it is accidental, as no one anticipated recovery.

Yours, etc.,

Namosau,
Ba,
Fiji.
May 8, 1958.

D. R. LITHGOW.

CHLORPROMAZINE JAUNDICE.

SIR: Referring to the article entitled "Resolution of Chlorpromazine Jaundice without Withdrawal of the Drug" by Professor Trethowan and Dr. Shand (M. J. AUSTRALIA, April 26, 1958), it does seem a pity that promazine ("Sparine") was not discussed as an alternative to chlorpromazine for the whole treatment, or as a substitute for chlorpromazine as soon as jaundice appeared.

Yours, etc.,

Observatory Clinic,
The Domain,
South Yarra,
Victoria.
May 5, 1958.

R. E. G. MACLEAN.

WAR, PEACE AND THE DOCTOR.

SIR: Faced with the harshest threat of dictatorship ever, or the wan hope of staving it off and marching in maimed glory through the ashes of our kith and kin with bloody flag wavering before, we should eagerly strive to reach the alternative advised by Professor Murdoch and commended in your editorial of May 3. May I comment to those who heed you four groups working for peace?

The Medical Association for the Prevention of War, 291 Burntwood Lane, London, S.W.17, England, prepares expert résumés on subjects like the effects of atomic explosions, immediate and remote; the psychology of propaganda; the ethical position of a doctor asked to take part in biological warfare, etc. Their pamphlets compare favourably with the material reviewed in your editorial.

The United Nations Association of Australia has a divisional office for this State at room 515, Colonial Mutual Buildings, Queen Street, Brisbane. This group is active in furthering support for the United Nations Organization and its offshoots.

The World Association of World Federalists, G.P.O. Box 4339, Sydney, has tens of thousands of members in 23 countries. Its officers include Lord Boyd Orr, one of our profession, a Nobel prizeman, former director of the Food and Agriculture Organization; Professor de Castro, his successor; Lord Beveridge; the Finance Minister of Ghana; Professor M. Oliphant and Sir John Butters, chairman of Associated Newspapers. Members include Yehudi Menuhin, Nehru of India, former British Air Minister Henderson, and the president of Standard Oil, United States of America. The present Pope has commended the work of this group, which

aims to: (i) make the United Nations more representative of nations on a population basis, without veto; (ii) allow it to pass laws regarding specified matters bearing on armaments; (iii) give the International Court of Justice a broader function with subsidiary courts empowered to try specified categories of disputes compulsorily, and to try individual breakers of world armament laws; (iv) set up permanent police inspection and military units to supervise total disarming of nations to specified levels needed for internal policing only; (v) provide for security of revenue for the United Nations within specified limits; (vi) extend the ancillary services of the United Nations to promote general prosperity; (vii) provide safeguards for nations, groups and individuals against usurped power of world authorities: a Bill of Rights and other constitutional safeguards for minorities; (viii) support the World Association of Parliamentarians for World Government, with several hundred members in eight countries, to extend its rapidly growing activities and to marshal public support for them in the councils of the United Nations.

Lest your encouragement may seem over-optimistic, might I quote some with their political feet on the ground who do not think so? "Do we want to transform the United Nations into a true international tribunal, capable of settling in a sovereign manner all disputes? Our Government willingly replies 'yes'." (M. Guy Mollet, French Prime Minister, 1956.) "The control must provide . . . real power . . . elevating the United Nations, or whatever may be the authority, into something like world government. . . . In the long run this is the only way out for mankind." (Rt. Hon. Harold Macmillan, as British Minister of Defence, 1955.) "I am ever more deeply convinced that the processes of the United Nations need further to be developed and strengthened. I speak particularly of its ability to secure justice under international law." (Dwight Eisenhower, United States President, 1956.) "The people of the world must hustle their governments." (Boyd Orr.)

The fourth organization I commend is a frankly pacifist one, "recognizing no one as enemies, whatever they may do". It is the Commonwealth of World Citizens, 13 Prince of Wales Terrace, London, W.8, England, which "levies" a voluntary tax on members of one two-hundredth of the year's income and is to hold its first World Parliament in Vienna this year.

Not all of these will appeal to all doctors, but parochial indeed must be the doctor who cannot identify himself with one of them.

Yours, etc.,

DOUGLAS EVERINGHAM.

21 East Street,
Rockhampton,
Queensland.

May 3, 1958.

PRURITUS ANI.

SIR: I was particularly interested by Dr. Edward Wilson's excellent survey of that common and distressing complaint *pruritus ani*. May I add one further simple therapeutic suggestion—lengthen the braces one or two inches as required to cover the central seam of the trousers from the internatal cleft. Also I would be glad to know if those who reply simply upon a belt suffer to the same degree as those who perhaps more pessimistically place their trust in elastic braces.

Yours, etc.,

F. KINGSLEY NORRIS.

645 Burke Road,
Camberwell,
Victoria.

May 8, 1958.

Obituary.

JOHN HOLMES SHAW.

WE are indebted to Dr. G. C. Scantlebury for the following account of the career of the late Dr. John Holmes Shaw.

The profession has suffered a severe loss in the death of John Holmes Shaw, M.B., B.S. (Melbourne, 1921), F.R.C.S. (Edinburgh, 1925), F.R.A.C.S. (1929), D.L.O. (England, 1925), which occurred in February of this year. Born in New Zealand, he passed his school days at Nelson College, but was in England in 1914, where he was about to begin his medical course at the London Hospital. He was accepted for military service but was discharged from the army very early on account of ill health, and spent his convalescence at home in New Zealand. Coming to Melbourne later, he qualified in 1921 and was resident at the Royal Melbourne Hospital for a year. After that, three and a half years were spent abroad working in London, Birmingham, Edinburgh and Vienna. He was a house surgeon at the London Hospital and in Birmingham. In later years, he spoke of Patterson at the London, J. S. Fraser of Edinburgh and Alexander of Vienna more than of any others under whom he worked. Returning to Melbourne in 1926, he served the Royal Melbourne Hospital and practised here till his death. During that time, Shaw was successively senior assistant and surgeon-in-charge of the ear, nose and throat department of the Royal Melbourne Hospital and, later, consultant. As a member of the council of the Victorian Branch of the B.M.A. in 1934 and 1935, he gave further service to the profession. This was followed by membership of the Victorian committee of the Royal Australasian College of Surgeons for some years, being chairman of that body from 1947 to 1949. From 1956 to 1957 he was president of the Oto-Laryngological Society of Australia. An honour of which he was, with reason, very pround was an invitation to become a member of the *Collegium Oto-Rhino-Laryngologicum Amicitiæ Sacrum*. This is an international body with very few members from any one country. He was able to attend a congress at Bordeaux in 1956 which was the yearly meeting of the college.

Impressive as the above record may be, it gives little idea of the man himself or of his actual work. Shaw was a remarkably successful and skilful operator, a constant student and an extremely able teacher and examiner of both graduates and undergraduates. His published papers on a variety of subjects such as pituitary surgery, peroral endoscopy, sinusitis and, later, a full study of hearing in a paper read to the College of Surgeons, all reflect evidence of deep and thorough study and attention to detail. The writer remembers his industry in early days when he gave every Saturday morning to a study and investigation of the labyrinth in cases of vertigo. This continued for some months and resulted in an interesting paper read to the B.M.A. One could write much more of his professional doings but even these pale before some of his other characteristics. He was always conscientious, gentle and considerate to his patients and was a wonderful friend. Many of us think constantly of his kindness and cooperation. We remember his scholarship in many cultural subjects and his courteous charm. He was deeply interested in literature and art, being a foundation member of the The National Gallery Society of Victoria. He was also a keen student of music.

In 1930, Shaw married Miss Hope Syme, daughter of the late Sir George and Lady Syme. To their happy life together, and to the care given him by both Mrs. Shaw and their daughter Fiona, much of his achievement can be attributed. To both of them our deepest sympathy is tendered.

JANET PATERSON WATT.

DR. JANET PATERSON WATT, of Penshurst, Victoria, who died on March 9, 1958, was the only daughter of the late Reverend William and Mrs. Watt. She was born in Richmond, Victoria, in 1903, her parents at that time being on furlough from the New Hebrides.

She was educated at the Presbyterian Ladies' College, Melbourne, from which she matriculated after a brilliant scholastic record, being *dux* of the college on one occasion. She entered the medical course at the University of Melbourne, whence she graduated M.B., B.S. in 1929. After graduation she served in India as a medical missionary for approximately five years under the Presbyterian Board of Missions. She returned to help in the endeavour to restore the health of her only brother, Thomas.

She then became a resident medical officer of the Queen Victoria Memorial Hospital until she commenced general practice at Penshurst in 1939. During part of the war years, 1942-1945, she assisted greatly as a senior resident medical officer in the Hamilton and District Base Hospital, notably in anæsthetics, the blood bank and midwifery as well as in general medical care of in-patients. She proved to be a sound diagnostician, wise in her judgement of emergencies and in her treatment of patients, and reliable as a family doctor. Her colleagues valued her services highly, not only for the heavy burden of medical work she carried out so well during the war years in the base hospital, but for her

consistent cooperation and wise handling of her patients subsequently. She proved herself highly competent not only in the medical sphere but as an outstanding citizen in her community. She took a leading part in the organization of the Penshurst hospital annexe, as health officer to the Shire of Mount Rouse, as a member of the country honorary medical staff of the Glenelg Base Hospital, and as honorary medical officer to the Penshurst and District Memorial Hospital.

In her care for her patients, she sacrificed herself to the limit of her endurance, no plea for her time or talents at any hour of the twenty-four ever being refused. She literally "died in harness". Her devotion to her medical duties, her church and her community has rarely been excelled.

Medical Societies.

MEDICAL DEFENCE SOCIETY OF QUEENSLAND.

ANNUAL MEETING.

THE fifty-sixth annual meeting of the Medical Defence Society of Queensland was held at B.M.A. House, 88 L'Estrange Terrace, Kelvin Grove, Brisbane, on Wednesday, March 26, 1958, at 5 p.m. The annual report for the year ended December 31, 1957, was adopted.

Annual Report.

The Council of the Medical Defence Society of Queensland has pleasure in presenting the fifty-sixth annual report for the year ended December 31, 1957.

Membership.

The membership of the Society is now 882 as against 811 last year. During the year 106 new members were elected and three returned from overseas. Our losses were as follows: left the State, 16; resignations, 7; lapsed by arrears, 4; deceased, 11.

There are 19 members who have indemnity insurance cover with other approved organizations.

Obituary.

We regret to record the deaths of the following members: Dr. J. M. Ballantine, Dr. G. H. McCafferty, Dr. Basil Hart, Dr. H. Flecker, Dr. D. N. Skyring, Dr. P. R. Walsh, Dr. H. C. Lanchester, Dr. Val McDowall, Dr. R. Grant, Dr. Walter Crosse, Dr. N. Goldman.

Office Bearers and Council, 1957.

The following office bearers were elected by Council: *President*, Dr. Neville G. Sutton; *Vice-President*, Dr. G. W. Macartney; *Honorary Treasurer*, Dr. T. V. Stubbs Brown; *Honorary Secretary*, Dr. F. W. R. Lukin; *Councillors for 1957*: Dr. T. R. Biggs, Dr. H. W. Horn, Dr. Athol Quayle, Dr. W. J. Saxton, Dr. F. Garrett Scoles, Dr. J. G. Wagner, Dr. B. N. Adsett.

The following councillors, who retired in conformity with the by-laws, were unanimously reelected: Dr. Neville G. Sutton, Dr. F. Garrett Scoles and Dr. F. W. R. Lukin. Dr. B. N. Adsett was elected to fill a vacancy on the Council.

Medico-Legal.

During the year six cases were submitted to the Society for advice or action, and three were carried over from the previous year. All were dealt with to the satisfaction of the Society and of the members concerned. Of the three cases carried over from last year, one has been settled and writs have been issued in the other two, which the Society is defending. Other matters on which members sought advice were dealt with by Council or by the Secretariat.

General.

Legal advice was received regarding Article 21A, relating to "other approved organizations" for indemnity insurance cover, to the effect that to limit such cover by members to the Medical Protection Society of London, either the Article would have to be amended or the Council would have to pass a resolution specifically cancelling previous approvals granted to members insured other than with the Medical Protection Society. Council deferred consideration of the matter so that it could be discussed at the annual meeting.

The Council gratefully acknowledges a generous legacy of £355 6s. left by the late Dr. Basil L. Hart in repayment of costs incurred by the Society in defending an action previously brought against Dr. Hart.

Mrs. Myra Spooner retired from the post of secretary on October 31, 1957, after many years of able and loyal service to the Society, and the Council has placed on record its sincere appreciation of her services and expressed the Society's best wishes for her health and happiness in her retirement. Mr. C. C. Jenkins, who succeeded Mrs. Spooner as Secretary of the British Medical Association, was appointed to fill the post.

Finance.

It will be shown by the balance sheet that the net surplus for the year ended December 31, 1957, amounted to £964 11s. 2d.

Some items of income and expenditure are as follows:

	£	s.	d.
Receipts:			
Annual Subscriptions, Medical Defence Society of Queensland	498	9	6
Entrance Fees, Medical Defence Society of Queensland	109	4	0
Subscriptions Indemnity Insurance, Medical Protection Society, Limited, London	5,845	0	6
Legacy—Dr. Basil L. Hart	355	6	0
Interest—			
Commonwealth Government Inscribed Stock	306	2	3
Commonwealth Savings Bank	3	2	1
National Bank of Australasia	54	19	6
Expenditure:			
Amount remitted to Medical Protection Society	5,139	14	3
Secretarial and Clerical Assistance	282	13	4
Rent	5	0	0
Postages, Duty Stamps, Bank Charges, Printing and Stationery	56	0	2
Audit Fee	17	17	0
Legal Expenses	4	14	6
Federal Income Tax for year ended December 31, 1955	40	18	0

The total assets of the Society amount to £13,440 7s. 11d.

An amount of £9,370 is invested in Commonwealth Government Inscribed Stock.

Balance Sheet.

The balance sheet and financial statement for the year ended December 31, 1957, was adopted.

Election of Councillors and Auditors.

Dr. D. R. L. Hart, Dr. Norman W. Martin and Dr. Robert Miller were elected to fill the vacancies on the Council caused by the resignations of Professor N. G. Sutton, Dr. G. W. Macartney and Dr. T. R. Biggs.

Messrs. R. G. Groom and Company, Chartered Accountants (Australia), were reappointed auditors for the ensuing year.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF ADELAIDE.

Refresher Week, 1958.

A WEEK of lectures, ward rounds, question sessions and practical demonstrations will be held from Monday, June 2, to Friday, June 6, 1958. The week has been arranged to include subjects of interest to general practitioners and will be held at the Royal Adelaide Hospital and the Queen Victoria Maternity Home. The fee for the course is £5 5s and the detailed programme is available from the Secretary.

Edward Stirling Lectures.

The Edward Stirling Lecturer for 1958 is Mr. B. K. Rank, M.S., F.R.C.S., F.R.A.C.S., and he will lecture on the nights of June 3 and 5 at 8.30 p.m. in the Verco Theatre. His subjects will be: June 3, "Fact and Fantasy in Facial Plastic Surgery"; June 5, "Difficult Decisions of Hand Repair".

Dr. Paul White.

Dr. Paul White, of the Massachussets General Hospital, Boston, will lecture on Tuesday, May 27, 1958, at 8.30 p.m. in the Verco Theatre. His subject will be "Heart Disease the World Over".

Australian Medical Board Proceedings.

NEW SOUTH WALES.

THE following additions and amendments have been made to the Register of Medical Practitioners for New South Wales, in accordance with the provisions of the *Medical Practitioners Act*, 1938 to 1958:

Registered medical practitioners who have complied with the requirements of Section 17 (3) and are registered under Section 17 (1*a*) of the Act: Callan, Noel John, M.B., B.S., 1955 (Univ. Melbourne); Chapman, Gilbert Wesley, M.B., B.S., 1955 (Univ. Adelaide); Kerr, Allan James, M.B., B.S., 1953 (Univ. Queensland); Morgan, Lloyd Kenneth, M.B., B.S., 1952 (Univ. Adelaide); Rutherford, Graham Arthur, M.B., B.S., 1951 (Univ. Melbourne).

Registered medical practitioners who have complied with the requirements of Section 17 (3) and are registered under Section 17 (1*b*) of the Act: Cusick, Edward Thomas, M.B., Ch.B., 1955 (Univ. Glasgow); Ferguson, William Glasgow, M.B., B.S., 1942 (Univ. Durham), F.R.C.S. (England), 1951; Hamilton, David Simpson, M.B., B.Ch., 1955 (Queen's Univ., Belfast); Marshall, Robert James, M.B., B.Ch., 1948 (Queen's Univ., Belfast); Sacks, Ralph Harold Bernard, M.B., B.S., 1950 (Univ. London); Thatcher, Anthony Preston, M.B., B.S., 1954 (Univ. London), D.A. (R.C.P. and S.), 1957; Wardle, Jacqueline Isabel Chevilliard, M.B., B.S., 1948 (Univ. London), M.R.C.S. (England), L.R.C.P. (London), 1948.

Registered medical practitioner who has complied with the requirements of Section 17 (3) and is registered under Section 17 (2) of the Act: Vince, Stephan, M.D., 1941 (Univ. Budapest).

Registered medical practitioner who has complied with the requirements of Section 17 (3) and is registered under Section 17 (2*a*) of the Act: Gyory, Albert, M.D., 1928 (Univ. Szeged).

Registered medical practitioner who has complied with the requirements of Section 17 (3) and is registered under Section 17 (2*b*) of the Act: Ozols, Olgerts-Konstantins, M.D., 1944 (Univ. Riga).

Notice.

CIBA FOUNDATION AWARDS.

Research into the Problems of Aging.

THE Trustees of the Ciba Foundation for the Promotion of International Cooperation in Medical and Clinical Research invite candidates to submit papers on research relevant to basic problems of aging. Not less than five awards, of an average value of £300 each, are available for 1959. The announcement of awards will be made in August 1959.

Entries will be judged by an international panel consisting of Professor C. H. Best (Toronto), Professor E. Braun-Menendez (Buenos Aires), Professor E. J. Conway (Dublin), Professor G. W. Corner (New York), Professor A. Haddow (London), Professor V. R. Khanolkar (Bombay), Professor R. Nicolaysen (Oslo), Dr. A. S. Parkes (London), Professor F. Verzár (Basle), and Professor F. G. Young (Cambridge). They will advise the Executive Council of the Foundation on their findings and will also have power to recommend variation in the size and number of the awards according to the standard of entries.

In making the awards preference will be given to younger workers.

The papers may be in the candidate's own language. Papers should not be more than 7000 words in length and in all cases a summary in English not exceeding in words 3% of the length of the paper must be attached. If possible, 10 copies of reprints in English should be provided.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED MAY 3, 1958.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.[2]	Australia.[3]
Acute Rheumatism	1	5(4)	6(1)	..	..	..	..	..	12
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	..	..	..	..	8	..	8
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	1	..	1	..	..	..	..	..	2
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	3(1)	7(6)	4(3)	..	1	..	1	..	16
Diphtheria	..	3(2)	..	..	1	1	..	..	5
Dysentery (Bacillary)	..	..	2(2)	1(1)	4(2)	..	2	..	9
Encephalitis	1(1)	1(1)	..	..	..	..	..	..	2
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	1(1)	..	..	1
Infective Hepatitis	38(16)	30(13)	7	..	18	1	..	..	94
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	1	..	2	..	..	..	..	..	3
Malaria	..	..	1(1)	..	..	..	..	..	1
Meningococcal Infection	3	2(2)	..	..	..	..	..	..	5
Ophthalmia	..	..	..	..	5	..	..	..	5
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	2(1)	..	..	..	..	..	..	..	2
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	..	1(1)	..	..	..	..	..	1
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	15(10)	..	2	13(10)	..	..	..	30
Salmonella Infection	..	..	..	2(2)	1(1)	..	..	..	3
Scarlet Fever	14(9)	48(33)	3(2)	5(2)	10(10)	1(1)	..	..	81
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	1(1)	1(1)	..	1(1)	..	..	..	3
Trachoma	..	..	..	..	7(3)	..	..	..	7
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	19(14)	21(11)	68(48)	9(8)	17(5)	2	..	..	136
Typhoid Fever	1	..	..	..	..	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne)	1[4]	..	..	..	..	..	..	..	1[4]
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.
[2] Figures not available.
[3] Figures incomplete owing to absence of returns from Australian Capital Territory.
[4] Contracted at Lord Howe Island.

Where there is one or more co-author, the name of the leading author should be indicated; it is to him that the award will normally be made, and it will be left to his discretion to share this award appropriately with his co-authors.

Entries must be received not later than January 10, 1959. Before an entry is submitted, copies of the regulations and a form of application must be obtained from G. E. W. Wolstenholme, Director and Secretary to the Executive Council, 41 Portland Place, London, W.1.

Congresses.

AUSTRALASIAN CONFERENCE ON RADIATION BIOLOGY.

THE second Australasian Conference on Radiation Biology will be held at the Cancer Institute, Melbourne, during the week December 15 to 18, 1958. Guest speakers at the conference will be Dr. L. H. Gray, Director of the British Empire Cancer Campaign, Radiobiological Research Unit, Mount Vernon Hospital, London, and Dr. J. F. Loutit, Director of the Medical Research Council Radiation Biology Unit, Harwell, Didcot, Berks, England. Proffered papers on relevant subjects are invited, and titles and a 250-word abstract should be in the hands of the convener by July 31, 1958. Registration forms and other information for those wishing to attend may be obtained from the Convener, Dr. J. H. Martin, Physics Department, Cancer Institute Board, 483 Little Lonsdale Street, Melbourne, Victoria, Australia.

Royal Australasian College of Surgeons.

OPEN MEETING.

THERE will be a meeting of the Royal Australasian College of Surgeons on Wednesday, May 28, at 8 p.m. in the Stawell Hall, 145 Macquarie Street, Sydney. The subject will be "Crohn's Disease and Allied Conditions". The speakers will be Mr. T. P. Nash and Mr. T. F. Rose. All medical practitioners are invited to attend.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Enders, Paul Siegfried, M.D., 1947 (Univ. Innsbruck), registered in accordance with the provisions of Section 17 (2B) of the *Medical Practitioners Act*, 1938-1957, 9 Church Street, Pymble, New South Wales.

Panettiere, Noel Daniele, M.B., B.S., 1958 (Univ. Melbourne), Balmoral Naval Hospital, Balmoral, New South Wales.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Opit, Louis Jonah, M.B., B.S., 1949 (Univ. Adelaide), F.R.C.S., F.R.A.C.S., Royal Adelaide Hospital, North Terrace, Adelaide.

Skinner, Sandford Lloyd, M.B., B.S., 1957 (Univ. Adelaide), 110 Young Street, Parkside, South Australia.

Wellby, Maurice Lindsay, M.B., B.S., 1957 (Univ. Adelaide), 4 Guernsey Terrace, Woodville, South Australia.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association: Bennett, James Percy, M.B., B.S., 1942 (Univ. Adelaide); Gould-Hurst, Peter R. S., M.B., B.S., 1954 (Univ. Adelaide); Kuusk, Edna, M.B., B.S., 1957 (Univ. Adelaide); Lippay, Franz Rudolf, M.B., B.S., 1942 (Univ. Adelaide), D.Sc., M.D.; Coulthard, Robert John, M.B., B.S., 1957 (Univ. Adelaide).

Deaths.

THE following deaths have been announced:

STEWART.—William Allan Stewart, on April 29, 1958, at Monegetta, Victoria.

MARGULIES.—Solomon Max Margulies, abroad.

Diary for the Month.

MAY 27.—New South Wales Branch, B.M.A.: Hospitals Committee.
MAY 28.—Victorian Branch, B.M.A.: Council Meeting.
MAY 29.—South Australian Branch, B.M.A.: Clinical Meeting.
MAY 29.—New South Wales Branch, B.M.A.: Branch Meeting.
JUNE 3.—New South Wales Branch, B.M.A.: Organization and Science Committee.
JUNE 4.—Western Australian Branch, B.M.A.: Branch Council.
JUNE 5.—South Australian Branch, B.M.A.: Branch Council Meeting.
JUNE 6.—Queensland Branch, B.M.A.: General Meeting.
JUNE 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales. Anti-Tuberculosis Association of New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

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